

## Single Integrated Metadata Structure (SIMS v2.0)

**Country:** Greece

**Compiling agency:** ELSTAT

**Domain name:** Production Index in Construction (IPC)

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<b>2. Metadata update</b> <a href="#">Top</a>	
<b>2.1 Metadata last certified</b>	12/10/2022
<b>2.2 Metadata last posted</b>	12/10/2022
<b>2.3 Metadata last update</b>	12/10/2022

<b>3. Statistical presentation</b> <a href="#">Top</a>	
<b>3.1 Data description</b>	
Data are disseminated for all activities listed in Section F – Construction of the statistical classification of economic activities NACE Rev.2 at the level of the overall index (total construction) and for the two components of the index, namely building construction and civil engineering works. No geographical breakdown is made for the above data. Data are quarterly and are presented in the form of indices and growth rates. Each quarter, unadjusted series, working-day-adjusted series and seasonally adjusted series are calculated.	
<b>3.2 Classification system</b>	
For the compilation of the indices the following classifications were used: <ul style="list-style-type: none"> <li>Statistical classification of categories of economic activities in the European Community, NACE Rev.2 (Council Regulation 1893/2006), Section F – Construction, Divisions 41, 42 and 43 and</li> <li>Classification of types in Construction – CC Classification.</li> </ul>	
<b>3.3 Sector coverage</b>	
The Production Index in Construction covers all activities listed in Section F – Construction as defined in the NACE Rev. 2 classification and more specifically Divisions 41, 42 and 43.	
<b>3.4 Statistical concepts and definitions</b>	
<p>The need for the Production Index in Construction arose primarily from the signing of the Treaty of Economic and Monetary Union (EMU), which acknowledged the necessity of having reliable statistics rapidly available for the purpose of analysing the economic performance of each Member State within the framework of implementation of EU economic policy.</p> <p>The purpose of the Production Index in Construction (IPC) is to compare the volume of the current, each time, quarterly volume of production (construction of buildings and production of civil engineering works) in the construction sector with the corresponding volume of production of a given period which is considered as base period.</p> <p>The Production Indices in Construction are short-term quarterly indices and they are the following:</p> <ul style="list-style-type: none"> <li>Production Index in Construction (Section F - Construction)</li> <li>Production Index of Building Construction (buildings)</li> <li>Production Index of Civil Engineering.</li> </ul> <p>The Production Index of Building Construction (buildings) includes the value of: demolition, site formation, and clearance work, general construction work for buildings (new work, additions, alterations and renovation work) and building installation and completion works. It also includes the value of construction in buildings, such as one- and two-dwelling buildings, multi-dwelling buildings, hotels, offices buildings, industrial and retail trade buildings, public entertainment and education buildings, hospitals and other non-residential buildings.</p> <p>The Production Index of Civil Engineering includes the value of: motorways, roads, streets, railways and airfields runways, sport facilities, bridges, tunnels, subways, long-distance pipelines communication and power lines (oil and gas pipelines, electricity lines, telecommunication lines), water projects, etc.</p> <p>The Production Index in Construction is compiled on the basis of the two above indices (Production Index of Building Construction and Production Index of Civil Engineering) by applying the appropriate weighting coefficients.</p>	
<b>3.5 Statistical unit</b>	
The sampling unit used is the Kind of Activity Unit (KAU).	

<b>3.6 Statistical population</b>
The statistical population refers to all enterprises classified in Section F - Construction as defined in the NACE Rev. 2 classification and comprises 74,337 construction enterprises on the basis of data of the annual construction survey of the year 2015.
<b>3.7 Reference area</b>
The survey covers the whole national territory. Data collection takes place in Attiki and in 21 Regional Units of Greece. No activities outside the national territory are covered and the collected data refer only to the domestic market.
<b>3.8 Time coverage</b>
The time series of the index with base year 2015=100.0 are released on a quarterly basis from the first quarter 2000 onwards.
<b>3.9 Base period</b>
The base year is the year 2015 (2015=100.0), since the announcement of the third quarter 2019 results on 13 December 2019.

<b>4. Unit of measure</b>	<a href="#">Top</a>
Index. Quarterly and annual changes (percentage %).	

<b>5. Reference period</b>	<a href="#">Top</a>
The reference period is the quarter.	

<b>6. Institutional mandate</b>	<a href="#">Top</a>
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<b>6.1 Legal acts and other agreements</b>
<p>The legal framework concerning the organization and operation of ELSTAT is as follows:</p> <ul style="list-style-type: none"> <li>• <b>Law 3832/2010</b> (Government Gazette No 38, Issue A): <i>"Hellenic Statistical System Establishment of the Hellenic Statistical Authority (ELSTAT) as an Independent Authority"</i>, as amended and in force.</li> <li>• <b>Regulation on the Operation and Administration of the Hellenic Statistical Authority (ELSTAT)</b>, 2012, (Government Gazette No 2390, Issue B, 28-8-2012) <b>Regulation (EC) No 223/2009 of the European Parliament and of the Council</b>, on the European statistics (Official Journal of the European Union L 87/164).</li> <li>• <b>Article 14 of the Law 3470/2006</b> (Government Gazette No 132, Issue A): <i>"National Export Council, tax regulations and other provisions"</i>.</li> <li>• <b>Article 3, paragraph 1c, of the Law 3448/2006</b> (Government Gazette No 57, Issue A): <i>"For the further use of information coming from the public sector and the settlement of matters falling within the responsibility of the Ministry of Interior, Public Administration and Decentralization"</i>.</li> <li>• <b>European Statistics Code of Practice</b>, adopted by the Statistical Programme Committee on 24 February 2005 and promulgated in the Commission Recommendation of 25 May 2005 on the independence, integrity and accountability of the national and Community statistical Authorities, after its revision, which was adopted on 28 September 2011 by the European Statistical System Committee.</li> <li>• <b>Presidential Decree 226/2000</b> (Government Gazette No 195, Issue A): <i>"Organization of the General Secretariat of the National Statistical Service of Greece"</i>.</li> <li>• <b>Articles 4, 12, 13, 14, 15 and 16 of the Law 2392/1996</b> (Government Gazette No 60, Issue A): <i>"Access of the General Secretariat of the National Statistical Service of Greece to administrative sources and administrative files, Statistical Confidentiality Committee, settlement of matters concerning the conduct of censuses and statistical works, as well as of matters of the General Secretariat of the National Statistical Service of Greece"</i>.</li> </ul> <p>The Legal Framework is detailed in the following link:</p>

<http://www.statistics.gr/en/legal-framework>

**EU legislation:**

The legal basis for the STS indices and for the Production Index in Construction, in particular, is Council Regulation No 1165/98 of 19 May 1998 concerning short-term statistics (STS-R) as amended by the Regulation (EC) No 1158/2005 of the European Parliament and of the Council of 6 July 2005 concerning short-term statistics and by Regulation (EC) No 1893/2006 of the European Parliament and of the Council of 20 December 2006 establishing the statistical classification of economic activities NACE Rev. 2. The compilation of the Production Index in Construction is also based on the framework of the implementation of Regulation (EU) No 2152/2019 of the European Parliament and of the Council on European Business Statistics, as well as Commission Implementing Regulation (EU) No 2020/1197 laying down technical specifications and arrangements pursuant to Regulation (EU) No 2152/2019.

The definitions of short-term statistics variables are laid down in Commission Regulation No 1503/2006 of September 2006 implementing and amending Council Regulation No 1165/98 of 19 May 1998 concerning short-term statistics and in Commission Implementing Regulation (EU) No 2020/1197 laying down technical specifications and arrangements.

**6.2 Data sharing**

None

**7. Confidentiality**

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**7.1 Confidentiality - policy**

The issues concerning the observance of statistical confidentiality by the Hellenic Statistical Authority (ELSTAT) are arranged by articles 7, 8 and 9 of the Law 3832/2010 as in force, by Articles 8, 10 and 11(2) of the Regulation on Statistical Obligations of the agencies of the Hellenic Statistical System and by Articles 10 and 15 of the Regulation on the Operation and Administration of ELSTAT.

More precisely:

ELSTAT disseminates the statistics in compliance with the statistical principles of the European Statistics Code of Practice and in particular with the principle of statistical confidentiality.

<https://www.statistics.gr/en/statistical-confidentiality>

**7.2 Confidentiality - data treatment**

ELSTAT protects and does not disseminate data it has obtained or it has access to, which enable the direct or indirect identification of the statistical units that have provided them by the disclosure of individual information directly received for statistical purposes or indirectly supplied from administrative or other sources. ELSTAT takes all appropriate preventive measures so as to render impossible the identification of individual statistical units by technical or other means that might reasonably be used by a third party. Statistical data that could potentially enable the identification of the statistical unit are disseminated by ELSTAT if and only if:

a) these data have been treated, as it is specifically set out in the Regulation on Statistical Obligations of the agencies of the Hellenic Statistical System (ELSS), in such a way that their dissemination does not prejudice statistical confidentiality or

b) the statistical unit has given its consent, without any reservations, for the disclosure of data.

The confidential data that are transmitted by ELSS agencies to ELSTAT are used exclusively for statistical purposes and the only persons who have the right to have access to these data are the personnel engaged in this task and appointed by an act of the President of ELSTAT.

ELSTAT may grant researchers conducting statistical analyses for scientific purposes access to data that enable the indirect identification of the statistical units concerned. The access is granted provided the following conditions are satisfied:

a) an appropriate request together with a detailed research proposal in conformity with current scientific standards have been submitted;

b) the research proposal indicates in sufficient detail the set of data to be accessed, the methods of analyzing them,

and the time needed for the research;

c) a contract specifying the conditions for access, the obligations of the researchers, the measures for respecting the confidentiality of statistical data and the sanctions in case of breach of these obligations has been signed by the individual researcher, by his/her institution, or by the organization commissioning the research, as the case may be, and by ELSTAT.

Issues referring to the observance of statistical confidentiality are examined by the Statistical Confidentiality Committee (SCC) operating in ELSTAT. The responsibilities of this Committee are to make recommendations to the President of ELSTAT on:

- the level of detail at which statistical data can be disseminated, so as the identification, either directly or indirectly, of the surveyed statistical unit is not possible;
- the anonymization criteria for the microdata provided to users;
- the granting to researchers access to confidential data for scientific purposes.

The staff of ELSTAT, under any employment status, as well as the temporary survey workers who are employed for the collection of statistical data in statistical surveys conducted by ELSTAT, who acquire access by any means to confidential data, are bound by the principle of confidentiality and must use these data exclusively for the statistical purposes of ELSTAT. After the termination of their term of office, they are not allowed to use these data for any purpose.

Violation of data confidentiality and/or statistical confidentiality by any civil servant or employee of ELSTAT constitutes the disciplinary offence of violation of duty and may be punished with the penalty of final dismissal.

ELSTAT, by its decision, may impose a penalty amounting from ten thousand (10,000) up to two hundred thousand (200,000) euros to anyone who violates the confidentiality of data and/or statistical confidentiality. The penalty is always imposed after the hearing of the defense of the person liable for the breach, depending on the gravity and the repercussions of the violation. Any relapse constitutes an aggravating factor for the assessment of the administrative sanction.

**Confidentiality** - if data are of truly confidential nature according to article 20 of Regulation (EC) No 223/2009 of the European Parliament and of the Council of 11 March 2009 (data which allow statistical units to be identified, either directly or indirectly), they have to be flagged confidential, and they will not be published by Eurostat.

**Embargo** – to enable Eurostat to produce press release, sometimes data are sent in advance to Eurostat. Those data, if considered under embargo will not be published by Eurostat until the embargo expires. This case is currently addressed by using confidentiality flags.

## 8. Release policy

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### 8.1 Release calendar

At the end of September of each year ELSTAT publishes a release calendar with the precise release dates of statistics for the following year.

### 8.2 Release calendar access

The calendar is distributed to the press and is available to all interested parties free of charge.

This calendar is also posted on the website of the ELSTAT (<http://www.statistics.gr/en/calendar>) under the title: "Release Calendar".

### 8.3 User access

In line with the Community legal framework and the European Statistics Code of Practice, ELSTAT disseminates national statistics on ELSTAT's website respecting professional independence and in an objective, professional and transparent manner in which all users are treated equitably.

In this content, data are released simultaneously to all interested parties and users through the Press Release on the Production Index in Construction, which is posted on the website of ELSTAT (<http://www.statistics.gr/en/home/>) according to the release calendar. This press release is also available by fax or e-mail to all interested parties. In addition, data are transmitted to Eurostat on a predefined date, concomitantly with their national publication.

Neither users nor the government have access to the data prior to their publication.

## 9. Frequency of dissemination

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The index is disseminated on a quarterly basis.

## 10. Accessibility and clarity

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### 10.1 News release

75 days after the end of the reference quarter, at 12.00, a press release is published which presents the newly calculated index of production in construction in Greek and English. This press release is also sent free-of-charge and mostly by email to the press and to other interested parties. The press release is also available on the website of ELSTAT:

(<http://www.statistics.gr/en/statistics/-/publication/DKT66/->)

In the press release, the Production Index in Construction (IPC) is published as following:

- working-day adjusted index, with base year 2015=100.0
- seasonally adjusted index,
- quarter-on-quarter growth rates,
- year-on-year growth rates.

### 10.2 Publications

The index is published in the following e-publications:

- The Greek Economy (<http://www.statistics.gr/en/the-greek-economy>)
- Greece in Figures (<http://www.statistics.gr/en/greece-in-figures>)

### 10.3 On-line database

There is no on-line database for the index.

#### 10.3.1 Data tables - consultations

Users' consultation as regards the survey on Production Index in Construction amounts to 46,052 webpage's hits for 2021. There is no potentiality to distinct consultations between data tables and metadata.

### 10.4 Micro-data access

Micro-data are made available to users after submitting a request to the:

Statistical Information and Publications Division

46, Pireos & Eponiton Str, PO Box 80847

18510 Piraeus

Tel: +30 213 135 2022

Fax: +30 213 135 2312

e-mail: [data.dissem@statistics.gr](mailto:data.dissem@statistics.gr)

For confidential reasons, access to micro-data is granted to users only under strict conditions and by always adhering to the relevant procedure. More information is available in the following link:

[https://www.statistics.gr/en/scientific\\_provision\\_data](https://www.statistics.gr/en/scientific_provision_data).

### 10.5 Other

Users can have access to ELSTAT publications, even for previous years, where they can find data on the IPC, which are posted on the digital library of ELSTAT, through <http://dlib.statistics.gr/portal/page/portal/ESYE/> and publications of Eurostat. Transmission of provisional and not publishable data to Eurostat within 60 days and final data within 75 days through the link:

<http://ec.europa.eu/eurostat/web/short-term-business-statistics/data/database>

The results of the Production Index in Construction are posted on the website of ELSTAT, at the link:

<http://www.statistics.gr/en/statistics/-/publication/DKT66/->

Users can be given data or further analysis, usually by fax or e-mail after submitting a request, describing the requested data, at the following link:

<http://www.statistics.gr/en/statistical-data-request>

Users can also contact the Data Dissemination Section, at the following e-mail address:

[data.dissem@statistics.gr](mailto:data.dissem@statistics.gr) and [data.supply@statistics.gr](mailto:data.supply@statistics.gr).

#### **10.6 Documentation on methodology**

The methodology for the compilation of the index is laid down by ELSTAT, taking into account international practices and in particular Eurostat's recommendations, guidelines and standards.

The Methodology of Short-term Business Statistics, Interpretation and guidelines, 2006, contains a comprehensive set of recommendations on the compilation of the STS statistics. It is available at the link:

<http://ec.europa.eu/eurostat/web/short-term-business-statistics/methodology>

A special methodological paper on the compilation of the Production Index in Construction in Greece is available on the website of ELSTAT ([www.statistics.gr](http://www.statistics.gr)) containing detailed information on the sources and the methodology used through the link:

<http://www.statistics.gr/en/statistics/-/publication/DKT66/->

##### **10.6.1 Metadata completeness – rate**

Metadata on the compilation of the Production Index in Construction are available on the webpage of ELSTAT (<http://www.statistics.gr/en/home/>), therefore metadata completeness is 100%.

#### **10.7 Quality documentation**

A Single Metadata Structure (SIMS) report is available at the link:

<http://www.statistics.gr/en/statistics/-/publication/DKT66/->

## **11. Quality management**

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### **11.1 Quality assurance**

The Hellenic Statistical Authority (ELSTAT) aims to ensure and further improve the quality of statistics produced and maintain confidence of users in them. This is achieved through the Quality Policy of ELSTAT which is posted on the website of ELSTAT and is available at the following link: <http://www.statistics.gr/en/policies>

Quality controls and validation of data are carried out during the whole process of the compilation of the index: from the data collection stage to the final compilation of the index.

First of all, well-trained and experienced staff is utilized for all the stages of the compilation of the indices, that is, for data collection including communication with the enterprises, initial checks, data entry and final checks, which are conducted after the calculation of the index. This way, the personnel have a comprehensive and longitudinal image of the enterprises under their responsibility.

Data are validated either before or after data entry by means of logical checks. During data processing the data are checked in order to identify and correct any errors. When an error is identified, data are further investigated, in cooperation with the enterprises in order to confirm that it is an error or it is just an unusual price. At the same time, data are checked for completeness, accuracy and consistency of the correlating variables.

The indices are calculated by means of specialised software, through automatic computation procedures ("routines"), thus eliminating any errors to the final results. Nevertheless, even during this stage, consistency checks are carried out to the final results, mainly by means of comparing the percentage changes of the sub-indices and their impact on the overall index.

### **11.2 Quality assessment**

Production Index in Construction is considered to be a highly reliable index. Its concepts and methodology have been developed according to international standards. The index is considered to be sufficiently accurate for the purposes for its compilation.

## 12. Relevance

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### 12.1 User needs

The Production Index in Construction meets national needs and the needs of European users. Generally, the index provides statistical information necessary to improve the competitiveness and performance of the construction sector.

The main national users of the index are the government, other public agencies, the Central Bank of Greece, other Hellenic banks etc., while at international level, it is used by Eurostat, the International Monetary Fund (IMF), the United Nations (UN), etc.

At national and international level, the index is used in order to give information on the evolution of the construction sector. Moreover, it indicates whether the construction production derives from building or civil engineering construction works. So, the index can be used in order to define which parts of construction are characterised by growth or recession, so as to adopt all the necessary strategies for further enhancing growth or moving towards better results.

### 12.2 User satisfaction

The Manufacture-Construction Indices and Industrial Products Section monitors user needs on a regular basis, in order to satisfy them. Generally, there is a smooth cooperation, through prompt response to users' requests. Users' comments are positive.

Moreover, ELSTAT conducts a user satisfaction survey every six months. Comments on media are also positive. More information about the results of the survey is available at the following link:

<http://www.statistics.gr/en/user-satisfaction-survey>

Furthermore, ELSTAT organises a Users Conference, on an annual basis, in which representatives of private and public sector, educational and research institutions participate. The conferences provide a significant opportunity for ELSTAT to collect comments and suggestions from users relative to the dissemination and the accessibility of the statistical data and the gaps in the production of statistics. The users conferences help significantly ELSTAT to draw useful conclusions on the areas where the statistical products and services can be improved in order to meet the increasing users needs. These conclusions are incorporated in the annual and medium term statistical programs of ELSTAT. The most recent Users Conference was held in 23 December 2019. More information on the conference is available at the link:

<https://www.statistics.gr/en/user-conference-2019>

### 12.3 Data completeness

The compilation of the Production Index in Construction and the data provided is in line with the relevant regulations and guidelines.

## 13. Accuracy and reliability

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### 13.1 Overall accuracy

The sources of errors having an impact on the accuracy of the index are sampling and non-sampling errors.

Sampling errors are not relevant and thus are not calculated because the sampling method used is not the random sampling but the purposive sampling. As regards non-sampling errors, these are mostly due to erroneous counting (measurement – processing errors) and to the non-response (non-response errors) of some enterprises. In the case of measurement – processing errors, the efforts are mostly focused on identifying, using well-established procedures, and correcting as many errors as possible during data processing. Regarding response, the focus is concentrated on increasing the percentage of enterprises, which actually report data on time for the first release of the index and in the case of missing values, improving the estimation process.

Concerning accuracy of first estimates, it should be noted that the common practice for routine revisions of IPC is that the data released for the reference quarter are provisional and are published together with the revised data of the previous quarter. The index is revised and considered to be final after the yearly correction, which is normally undertaken during the first semester of the year (usually in June) following the reference year.

### 13.2 Sampling error

ELSTAT do not calculate sampling errors for the index due to the purposive sampling technique, which is applied.

### 13.3 Non-sampling error

Non-sampling errors involve coverage errors, measurements errors, non-response errors, processing errors and



model errors.

**a. Unit non – response**

These errors exist when data are not collected for all population units designated for data collection. For IPC, only unit non-response is relevant. Item non-response is not relevant, as for the survey of IPC only one variable (e.g. turnover) is collected. The survey is compulsory. In the first data release for the reference quarter, the response rate is around 85%, whereas when the index is revised for the first time, along with the release of the next quarter the response rate reaches 90%. The index is revised once again and considered to be final after the yearly correction, which is normally undertaken during the first semester of the year (usually in June) following the reference year and at that time the response rate is around 99%. It should be noted that the missing values usually refer to smaller enterprises, for which the response burden is normally higher. Particularly for the 3<sup>rd</sup> quarter 2020 for the first released data, the unweighted response rate was 99.4%, whereas the weighted response rate was 94.0% (the weighting variable used is turnover).

In order to increase the rate of response, there is direct communication with the surveyed enterprise by telephone or by sending a reminder by fax or email in an effort to convince them to give the necessary data, even in the form of estimations. The competent staff may even visit the enterprise in order to achieve cooperation.

The missing values, which are due to non-response, are imputed/estimated on the basis of the data of the previous quarters/years, taking into consideration the evolution of the enterprise and the construction sector. It should be noted that imputation is the process used to assign replacement values for missing, invalid or inconsistent data. In this context, the imputation rate may be considered equal to the non-response rate, as all the missing values are estimated for the calculation of the index, whereas the vast majority of invalid or inconsistent data is normally verified or corrected before the index calculation.

**b. Item non - response**

Item non-response is not relevant, as for the survey of IPC only one variable (e.g. turnover) is collected.

**13.3.1 Coverage error**

No coverage errors are observed in the Business Register of ELSTAT, on the basis of which the survey on the compilation of the IPC was designed.

**13.3.1.1 Over-coverage – rate**

No over coverage errors are observed (e.g., closed enterprises or enterprises out of the scope of the survey) in the Business Register of ELSTAT on the basis of which the survey on the compilation of the IPC was designed. Nevertheless, in cases where an enterprise is found to be out of the scope of the survey, e.g. it has no construction activity, the enterprise is excluded from the survey.

**13.3.1.2 Common units – proportion**

Not applicable.

**13.3.2 Measurement error**

These are errors that occur during data collection and they are categorized as survey instrument, respondent and interviewer. Regarding survey instrument errors, for the compilation of the index, data are collected through a specially designed questionnaire, which is the same for every enterprise. The purpose of the questionnaire is to collect information about the turnover value of enterprises in construction for various categories (activity codes 4100, 4211, 4212, 4213, 4221, 4222, 4291, 4299 and 4300) and it is accompanied with detailed instructions about the elements that should be included in the turnover value. Interviewer errors are not very common as well-trained and experienced staff is utilized for the stage of the data collection including direct communication with the enterprises. Respondent errors are the most frequent type of errors. In this context, erroneous data may be provided by the surveyed enterprises. These errors are usually easy to identify, as there are in force rules to assist in detecting possible inconsistencies that require further investigation in order to determine whether they are actually errors or just unusual values. Current responses are compared with data provided by the enterprises during the previous quarters or years. In several cases where errors may have significant impact on the results, control at source is conducted through getting access to the enterprises accounts. The vast majority of these errors, after being detected, are duly corrected.

**13.3.3 Processing error**

Processing errors are errors that may occur when processing the collected data, manually or automatically and

comprise of data entry, data editing, coding and imputation.

As already mentioned in the case of measurement errors, the data of the surveyed enterprises are examined thoroughly (both electronically and manually) by the competent staff using logical controls, reasonability checks and relation checks. If these checks reveal inconsistencies, further measures are taken to either assure the accuracy of data or correct them (if they are proven to be erroneous data). Data editing is carried out for the entire sample of enterprises, but with priority given to those with the greatest impact in the index calculation.

It should be noted that the risk of such errors is rather small because all tasks engaged to the processing procedure (e.g. weighting, calculations, tabulation etc) are performed by using a special software application.

Coding of the data is not applicable in the case of IPC.

#### **13.3.4 Model assumption error**

No model is used for the compilation of the Index, so this type of error is not relevant.

### **14. Timeliness and punctuality**

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#### **14.1 Timeliness**

The index is published 75 days after the end of the reference quarter.

#### **14.2 Punctuality**

Production Index in Construction is published according to the pre-announced release calendar.

### **15. Coherence and comparability**

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#### **15.1 Comparability - geographical**

The STS Regulations and the STS methodological guidelines are applied for the compilation of the index, thus ensuring a good comparability between the Greek Production Index in Construction and the other national and European indices, taking always into account the special conditions that may prevail in each country, which may dictate minor methodological deviations.

##### **15.1.1 Assymetry for mirror flows statistics – coefficient**

There are no mirror flows statistics among EU Member States in the IPC.

#### **15.2 Comparability over time**

The available full time series of the revised Production Index in Construction (2015=100.0) consists of the backcasted indices for the period 2000-2014 and of the re-calculated indices using the new data on turnover and new weighting scheme from the year 2015 onwards. Therefore, the time series of the Production Index in Construction (base year 2015=100.0), from 2015 onwards is considered fully comparable over time.

#### **15.3 Coherence cross-domain**

Regular crosschecks are made with information from the other surveys.

Comparison of the index with the results from the Annual Construction Survey (SBS) takes place upon availability of the annual results. In addition, the index is regularly crosschecked with other data, such as data on construction costs or building permits. Any differences are checked and justified.

##### **15.3.1 Coherence – sub annual and annual statistics**

###### **Coherence with building permits**

The data of the survey of IPC cannot be directly compared with the data of the Building Activity Survey (Private - Public). This is because the Building Activity Survey is based on Administrative Sources (Urban Planning Authorities) and the collected data refer to all issued building permits (new buildings, additions, repairs or renovations etc) and not to the completed buildings. Thus, the purpose of this survey is to depict the future development of building activity. On the contrary, the IPC data are obtained through direct survey to construction companies and refer to the realized activity in construction (both building construction and civil engineering works).

###### **Coherence – Annual Construction Survey**

Any differences observed in the growth rates between the IPC and the turnover of SBS are mostly due to the fact that

for the compilation of the IPC a common sample of enterprises is used for every month, which is updated when the Index is revised with a new base year, while in the SBS surveys the sample of enterprises is updated on a yearly basis, except for very big enterprise. The common sample of enterprises used in the IPC ensures accurate presentation of the evolution of the Index over several time periods. Moreover, there is a difference in the European definition of turnover between STS and SBS.

### **15.3.2 Coherence – National Accounts**

The IPC generally follows the development in the Section F of Annual National Accounts, but the coherence is not as high as expected.

The main reason for the discrepancy in the growth rates between the IPC and the National Accounts is the fact that the compilation of National Accounts is based on data for building permits and public investment, instead of the index. Moreover, the coverage of National Accounts is exhaustive, covering total economy.

### **15.4 Coherence - internal**

The index is internally coherent. For gross and working day adjusted data, the overall index (Production Index in Construction) derives from the sub-indices of the two components of the index, Building Construction and Civil Engineering, according to well-defined procedures. For seasonally adjusted data, there is no coherence between the overall index and the sub-indices, as the time series are directly seasonally adjusted, namely each time-series is seasonally adjusted independently.

## **16. Cost and burden**

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According to the results of the Cost Assessment Survey covering the production of statistics in the ESS for the year 2020 launch by Eurostat and carried out by ELSTAT, it can be concluded that, regarding the staff of ELSTAT engaged in the compilation of IPC, the annual cost in hours worked amount to 995. According to the results of the Assessment of the Response Burden of the Surveyed Statistical Units which was carried out by ELSTAT for the year 2019, the annual average burden in hours worked is 1.4 hours per enterprise or totally 277 hours for all enterprises.

During the last years, there has been a substantial reduction in the response burden, as ELSTAT has initiated the exploitation of data from administrative sources (VAT declarations), especially for small and medium size enterprises, instead of data collection.

## **17. Data revision**

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### **17.1 Revision policy**

The general revision policy adopted for ELSTAT, which is also applied to Production Index in Construction, is available at the link:

<http://www.statistics.gr/en/policies>.

In accordance with the Revision Policy of ELSTAT and the ESS guidelines, the revisions are classified as planned revisions, which refer to routine revisions and major revisions, and non-scheduled revisions.

#### **Routine revisions**

The Production Index in Construction is published 75 days after the end of each reference quarter. Data for the reference quarter are provisional when first released and are published together with the revised data of the previous quarter. The index is revised and considered to be final after the yearly correction, which is normally undertaken within the first semester of the year following the reference year. These quarterly revisions are related to the regular data production process and they are caused by the delayed reporting of some enterprises (estimated values for missing responses are replaced by reported figures). For some cases, the annual completion of business accounts may introduce revisions, but this is not a regular process.

The routine revisions of the index are included in the list of scheduled revisions of ELSTAT, which is available at the link:

<http://www.statistics.gr/en/scheduledrevisions>.

#### **Major revisions**

In accordance with the requirements of the Council Regulation (EC) No 1165/98 concerning short-term statistics, short-term indices are revised every five (5) years, particularly in calendar years ending in 0 or 5. In this framework, the index is fully revised every five years, with the change of the base year and the implementation of new weighting scheme. During these revisions, confrontation with the results of the Annual Construction Survey normally takes place. Major revisions are pre-announced to the public through a special methodological paper, named "Methodological note on the revision of Production Index in Construction", containing detailed information about the revision. This note is available at the link:

<http://www.statistics.gr/en/statistics/-/publication/DKT66/->.

In addition, a relevant text on the planned revision of the index is included in the Annual Statistical Work Programs of ELSTAT.

Moreover, major revisions are accompanied at the time of the publication with updated back data.

#### **Non-scheduled revisions**

Non-scheduled revisions may occur as a result of unforeseeable events such as errors. They are not announced in advance by definition. The users are promptly informed on significant errors identified in published statistics. The revised results are released without any delay in an open and transparent manner. The reasons for carrying out the non-scheduled revisions are also published. Non-scheduled revisions are accompanied by relevant documentation, as well as by updated back data if available.

Benchmarking with other statistics is not carried out regularly.

Regular revision analysis is carried out once a year and revisions indicators are calculated and included in the metadata reports.

The same revision policy is applied to data released nationally and to those transmitted to Eurostat, in order to assure coherence.

#### **Vintage databases**

Vintage databases are not available.

### **17.2 Revision practice**

In accordance with the requirements of the Council Regulation (EC) No 1165/98 concerning short-term statistics, short-term indices are revised every five (5) years, particularly in calendar years ending in 0 or 5. In this framework, the index is fully revised every five years, with the change of the base year and the implementation of new weighting scheme. The latest revision of the index, with base year 2015=100.0, was completed in 2019 and the previous with 2010=100.0 in 2014.

Major revisions are pre-announced to the public through a special methodological paper, named "Methodological note on the revision of Production Index in Construction", containing detailed information about the revision. This note is available at the link:

<http://www.statistics.gr/en/statistics/-/publication/DKT66/->.

In addition, a relevant text on the planned revision of the index is included in the Annual Statistical Work Programs of ELSTAT.

Moreover, major revisions are accompanied at the time of the publication with updated back data. During the last revision (2015=100.0), there was a recalculation of the indices using the new weighting scheme from the year 2015 and onwards, along with back-casting of the indices for the period 2000-2014, thus resulting in the time series of the IPC from Q1 2000 onwards, with base year 2015=100.0, being fully comparable over time.

Benchmarking is not carried out regularly. For some units, it may be possible to benchmark quarterly data with yearly data, but only when there is a reason for closer examination of problematic data.

As far as routine revisions are concerned, the common practice for IPC is that the data released for the reference quarter are provisional and are published together with the revised data of the previous quarter. The index is revised and considered to be final after the yearly correction, which is normally undertaken during the first semester of the year following the reference year. This monthly correction is on account of the delayed reporting of some enterprises.

More specifically, for the period Q1 2017 to Q4 2021 (20 quarters) and for the overall Production in Construction index (Section F), the following Quality Indicators have been calculated:

Growth rates for unadjusted data (yoy):

MAR = 1.328, RMAR = 0.109, MR = 0.091

Growth rates for working day adjusted data (yoy):

MAR = 1.440, RMAR = 0.121, MR = -0.017

Growth rates for seasonally adjusted data (qoq):

MAR = 2.284, RMAR = 0.358, MR = 0.092

(MAR: Mean Absolute Revision, RMAR = Relative Mean Absolute Revision, MR: Mean Revision)

## 18. Statistical processing

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### 18.1 Source data

ELSTAT uses a statistical survey in order to calculate the Production Index in Construction. The sampling frame is based on the results of the annual 2015 Construction Survey, which is conducted by ELSTAT.

The sampling unit used is the KAU (Kind of Activity Unit). The sample of units surveyed for the Production Index in Construction comprises 1,179 enterprises out of a total of 74,337 construction enterprises, on the basis of data of the annual construction survey of the year 2015. As regards turnover, the turnover of the surveyed units represents at least 64% of the total turnover at the two-digit level of economic activity, according to the results of the annual construction survey of the year 2015.

### 18.2 Frequency of data collection

Data are collected on a quarterly basis.

### 18.3 Data collection

Data are collected through a specially designed questionnaire, the same for every enterprise. The requested data refer to activity codes 4100, 4211, 4212, 4213, 4221, 4222, 4291, 4299 and 4300.

The different work categories covered are:

- building construction;
- construction of roads and motorways;
- construction of railways and underground railways;
- construction of bridges and tunnels;
- construction of utility projects for fluids;
- construction of utility projects for electricity and telecommunications;
- construction of water projects;
- construction of other civil engineering projects n.e.c.;
- demolition and site preparation; electrical installation; plumbing, heat and air-conditioning installation; other construction installation; building completion and finishing.

The purpose of the indices is to collect information about the turnover value of enterprises in construction. The questionnaire collects information about the total amount invoiced by the observation unit during the reference quarter, which corresponds to the total receipts from building and other construction works and the provision of services (subcontracting). It also includes receipts from repairs, maintenance, and improvements of construction works, as well as receipts from services that are bound to the construction, such as assembly and installation, which are carried out within the reference period. The information provided refers only to the turnover of the domestic market.

The questionnaires are sent by post and they are collected:

- via post
- via fax
- via e-mail.

In case of non-response, the surveyed enterprise is contacted by telephone, or is sent a reminder by fax or e-mail, or even the competent staff may pay a visit to the enterprise.

#### 18.4 Data validation

At national level, data processing involves checking the data received from the respondents with the aim of identifying (and eventually correcting) any errors. Not all errors can be identified and the aim is to detect the errors that have a significant impact on the results. Rules to assist in identifying errors may flag possible errors that require further investigation to determine whether it is actually an error or just an unusual value. Data processing also involves checks for completeness, checks to confirm that values are within given ranges and that values for related variables are coherent. Data processing may take place during or after data entry.

Responses can be compared with the responses of previous quarters. Inconsistencies or big deviations (outside of a pre-established range) indicate that further checks are required and may result in further processing. In the context of timeliness, the data processing may be designed to give top priority to those outliers that are most in the need to be edited, thus ensuring reliability of aggregates. By solving the worst cases, large improvements can be achieved.

Eurostat also carries out validation checks on the national aggregated indices it receives. This may result in contacting the reporting country. In the context of timeliness, the validation process may be designed to give top priority to those outliers that are most in the need to be verified, thus ensuring reliability of European aggregates.

#### 18.5 Data compilation

The Production Indices in Construction are fixed-base indices (2015=100.0) calculated using a variation of the Laspeyres formula. The indices are calculated initially at the two-digit level of economic activity and subsequently, with the implementation of appropriate weighting coefficients, the index is calculated at the one-level (overall index). More specifically, in order to compile the index at the two-digit level,  $k$ , the value of turnover of all the surveyed enterprises (deflated), for the quarter  $t$ , needs to be computed and be compared with the average quarterly value of turnover of the base year (2015=100.0), as follows:

$$I_k^{(t)} = \frac{y_k^{(t)}}{y_k^{(0)}}$$

where:

$y_k^{(t)}$  : the deflated quarterly turnover value of all the surveyed enterprises at the two-digit level  $k$  during the quarter  $t$ ,

$y_k^{(0)}$  : the average quarterly deflated turnover value of all the surveyed enterprises at the two-digit level  $k$  during the base year (2015).

It should be noted that the deflated value of turnover is used instead of the volume, because it is difficult to collect data on volume, both in terms of time needed and its actual estimation.

The above index is not adjusted for the number of working days for each quarter.

In order for the indices to be comparable over time, the indices at the two-digit level are reduced to standard quarter indices ( $I_k'^{(t)}$ ), where the typical quarter is adjusted on a quarterly basis in order to include an equal number of working days in each quarter.

The adjustment is made by multiplying the indices at two-digit level ( $I_k^{(t)}$ ) with an appropriate weighting coefficient  $\alpha_t$  which is calculated as follows:

$$\alpha_t = \frac{\bar{x}}{x_t}$$

where:

$\bar{x}$  : the average quarterly number of working days of the current year  $t$ ,

$x_t$ : the number of working days in quarter  $t$ .

The overall index ( $I^{(t)}$ ) that is the Production Index in Construction, is compiled as follows:

$$I^{(t)} = \sum_{k=1}^2 w_k \cdot I_k^{(t)}$$

where:

$$w_k = \frac{Y_k^{(0)}}{\sum_{k=1}^2 Y_k^{(0)}}$$

weighting coefficient of the two-digit level  $k$ ,  $k=1,2$ , where:

$Y_k^{(0)}$  : the annual turnover value of all the enterprises of the two-digit level  $k$ ,  $k=1,2$  in the base year 0, according to the results of the 2015 Annual Construction survey.

$\sum_{k=1}^2 Y_k^{(0)}$  : the annual turnover value of all the two-digit levels  $k$ ,  $k=1,2$ , which compose the level for which the index is being compiled (one-digit level) during the base year 2015=100.

When compiling the overall adjusted index ( $I'^{(t)}$ ), the weighting is applied to each individual two-digit level adjusted indices as follows:

$$I'^{(t)} = \sum_{k=1}^2 w_k \cdot I_k'^{(t)}$$

### **Weights**

To calculate the weights of the revised indices in each individual construction activity, the total turnover on the basis of the 2015 annual construction survey was taken into account, per activity, thus producing the following weights:

<b><u>ECONOMIC ACTIVITY</u></b>	<b><u>WEIGHTS</u></b>
BUILDING PROJECTS	0.39
CONSTRUCTION CIVIL ENGINEERING PROJECTS	0.61

The backcasted (by reduction) quarterly and annual indices of each division for the period Q1 2000 – Q4 2014 were calculated using the annual average indices of the divisions in 2015, according to the formula:

$$R_{k(2015)}^{(t)} = R_{k(2010)}^{(t)} \cdot b_k$$

where :

$$b_k = \frac{100}{\bar{R}_{k(2010)}^{(2015)}}$$

$R_{k(2015)}^{(t)}$ : the index of the division  $k$  during the current period (quarter, year)  $t$  with base year 2015,

$R_{k(2010)}^{(t)}$  : the index of the division  $k$  during the current period (quarter, year)  $t$  with base year 2010 and

## 18.6 Adjustment

### Deflation

The value rather than the volume of construction is recorded, because there are difficulties in collecting volume data, both in terms of time and its true valuation. For this reason, the data are adjusted by removing price changes due to inflation, in order to isolate the actual volume development. The deflation is applied with base year 2015, using the Consumer Price Index (CPI) as a deflator, in order to produce a series at constant prices. The deflated value results from the division of the collected turnover value data by the deflator.

### Calendar adjustment

The initial data refer to calendar quarters, which do not all have the same number of working days, and therefore the compiled indices are not comparable. In order to overcome this default, an adjustment of the indices takes place in order to make them of equal duration.

The adjustment is made by multiplying the indices of two-digit level with appropriate weighting coefficient  $\alpha_t$  calculated as follows:

$$\alpha_t = \frac{\bar{x}}{x_t}$$

where:

$\bar{x}$  : the average quarterly number of working days, of the current year,

$x_t$  : the number of working days in quarter t.

These weighting coefficients are reviewed annually.

The KAUs are classified into groups depending on the number of days these KAUs operate every quarter. For construction, there is only one group of KAUs, those that belong in enterprises operating only on official working days.

On the basis of this classification and the corresponding number of working days, the working day adjustment coefficients are calculated using the proportional method.

### 18.6.1 Seasonal adjustment

Seasonal adjustment is the process of elimination of the effect of seasonality on the time-series in order to improve comparability over time. The seasonal adjustment is carried out by applying the method TRAMO-SEAT and by using the software JDemetra+ 2.0.0.

The seasonal adjustment is applied at the level of the overall index (Production Index in Construction) and for the two components of the index, Building Construction and Civil Engineering. For the adjustment of the overall index and the components, the direct approach is applied, namely each time-series is seasonally adjusted independently.

Seasonally adjusted data are available from Q1 2000 onwards, at the following link:

<http://www.statistics.gr/en/statistics/-/publication/DKT66/>.

## 19. Comment

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None