Single Integrated Metadata Structure (SIMS v2.0)

Country: Greece

Compiling agency: ELSTAT

Domain name: Industrial Production Index

ELSTAT metadata
Reference metadata
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1. Contact	Top
1.1 Contact organisation	Hellenic Statistical Authority (ELSTAT)
1.2 Contact organisation unit	Business Statistics Division (B3) Manufacture – Construction Indices and Industrial Products Section (B33)
1.3 Contact name	Diamantaki Ekaterini
1.4 Contact person function	Head of Manufacture – Construction Indices and Industrial Products Section
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1.7 Contact phone number	+30 213 1352056
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2.   Metadata update

2.1 Metadata last certified	17/04/2021
2.2 Metadata last posted	17/04/2021
2.3 Metadata last update	17/04/2021

3.   Statistical presentation

3.1 Data description

Data are disseminated for the majority of the activities of Sections B: Mining and quarrying, C: Manufacturing, D: Electricity, gas, steam and air conditioning supply, and E: Water supply, sewerage, waste management and remediation activities of the statistical classification of economic activities NACE Rev.2 of EU at the 2-digit, 3-digit and 4-digit level (divisions, groups and classes respectively) and for the main industrial groupings (capital goods, intermediate goods, durable consumer goods, non-durable consumer goods and energy). No geographical breakdown is made for the above data. Data are monthly and are presented in the form of indices and growth rates. Each month, unadjusted series, working-day-adjusted series and seasonally adjusted series are calculated.

3.2 Classification system

For the compilation of the indices the following classifications are used:

- Statistical classification of economic activities NACE Rev. 2 in the European Community (pursuant to Regulation (EC) No 1893/2006 of the European Parliament and of the Council), at 4-digit level.
- Classification of products by activity (CPA) of EU (pursuant to Regulation (EC) No 451/2008 of the European Parliament and of the Council), at 6-digit level.
- At the level of main industrial groupings, the allocation of 2-digit and 3-digit NACE Rev. 2 headings to categories of aggregate classification is effected in compliance with Commission Regulation No 656/2007.

3.3 Sector coverage

The Industrial Production Index covers the divisions of economic activities listed in Sections B: Mining and quarrying, C: Manufacturing, D: Electricity, gas, steam and air conditioning supply, and E: Water supply, sewerage, waste management and remediation activities, as defined in the statistical classification NACE Rev. 2, and more specifically divisions 05-36.

3.4 Statistical concepts and definitions

The objective of the index is to compare the magnitude (volume) of the output in the current month in the mining and quarrying, manufacturing, electricity and water supply divisions with the corresponding output of a given fixed period, which is considered as base period. The Industrial Production Index shows the evolution of the value added of the production factors cost, at constant prices.

Detailed definitions of short-term indicators are described in the Commission Regulation No 1503/2006.

3.5 Statistical unit

The sampling unit used is the Kind of Activity Unit (KAU).

3.6 Statistical population

The statistical population refers to all enterprises classified in the sections of Industry and comprises 5,788 enterprises according to the 2015 PRODCOM survey.

3.7 Reference area

The survey covers the whole national territory. Data collection takes place in Attiki and in 47 Prefectures of Greece.

No activities outside the national territory are covered. The recorded production is only the production actually carried out in the Greek territory.

3.8 Time coverage

The time series of the IPI with base year 2015=100.0 is being released on a monthly basis. Series start from January 2000.

From July 2019 onwards, with the announcement of the Press Release for May 2019, the base year is the year 2015 (2015=100.0).

4. Unit of measure

Index. Monthly and annual changes (percentage %).

5. Reference period

The reference period is the month.

6. Institutional mandate

6.1 Legal acts and other agreements

The legal framework concerning the organization and operation of ELSTAT is as follows:

- **Law 3832/2010** (Government Gazette No 38, Issue A): *"Hellenic Statistical System Establishment of the Hellenic Statistical Authority (ELSTAT) as an Independent Authority",* as amended and in force.

- **Regulation on the Operation and Administration of the Hellenic Statistical Authority** (ELSTAT), 2012, (Government Gazette No 2390, Issue B, 28-8-2012) **Regulation (EC) No 223/2009 of the European Parliament and of the Council**, on the European statistics (Official Journal of the European Union L 87/164).

- **Article 14 of the Law 3470/2006** (Government Gazette No 132, Issue A): *"National Export Council, tax regulations and other provisions"*.

- **Article 3, paragraph 1c, of the Law 3448/2006** (Government Gazette No 57, Issue A): *"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"*.

- **European Statistics Code of Practice**, 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.

- **Presidential Decree 226/2000** (Government Gazette No 195, Issue A): *"Organization of the General Secretariat of the National Statistical Service of Greece"*.

- **Articles 4, 12, 13, 14, 15 and 16 of the Law 2392/1996** (Government Gazette No 60, Issue A): *"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".*

The Legal Framework is detailed in the following link:
http://www.statistics.gr/en/legal-framework

EU legislation:

The legal basis for the STS indices and for IPI, 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 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.

The classification by main industrial groupings (MIGs) is defined by Commission Regulation No 656/2007.

6.2 Data sharing
None

7. Confidentiality

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. http://www.statistics.gr/en/statistical-confidentiality?inheritRedirect=true

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 are flagged as confidential and are not published. Eurostat is legally bound to suppress such data from publication as well.

8. Release policy	Top

8.1 Release calendar
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 ELSTAT's website (http://www.statistics.gr/en/home/) under the item "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 Industrial Production Index, 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	Top

The index is disseminated on a monthly basis.

10. Accessibility and clarity	Top

10.1 News release
Every month, 40 days after the end of the reference month, at 12.00, a Press Release is published which presents the newly calculated Index of Industrial Production in Greek and English. The press release is 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/DKT21/-).

In the Press Release the Industrial Production Index is published as following:

- working day adjusted index, (base year 2015=100.0),

- seasonally adjusted index,

- month-on-month growth rates,

- year-on-year growth rates.

10.2 Publications

The IPI is published in the following paper publications:
- "Greece in Figures", which presents annual average indices for the last three years at the level of the overall index, sub-indices for sections and divisions and indices for the main industrial groupings.
 - "The Greek Economy", where monthly, quarterly and annual growth rates are published at the level of the overall index and for the main industrial groupings.

Moreover, IPI 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 IPI.

10.3.1 Data tables - consultations

Users' consultation as regards the survey on Industrial Production Index amounts to 1,949,756 webpage's hits for 2020. 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

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.

10.5 Other

Users can have access to ELSTAT publications, even for previous years, where they can find data on the IPI, which are posted on the digital library of ELSTAT, through:

http://dlib.statistics.gr/portal/page/portal/ESYE.

Data are sent to Eurostat and published in Eurostat online database

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

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

http://www.statistics.gr/en/statistics/-/publication/DKT21/-.

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 and data.supply@statistics.gr.

10.5.1 Metadata – consultations

See 10.3.1 above.

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 IPI in Greece is available on the website of ELSTAT (http://www.statistics.gr/en/home/) containing detailed information on the sources and the methodology used through the link: http://www.statistics.gr/en/statistics/-/publication/DKT21/-.

10.6.1 Metadata completeness – rate

Metadata on the compilation of the Industrial Production Index 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/DKT21/-.

11. Quality management

11.1 Quality assurance

The Hellenic Statistical Authority (ELSTAT) aims to ensure and further improve the quality of statistics produced and maintain the 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 knowledge of the enterprises under their responsibility.

Data are validated either before or after data entry to the data base of ELSTAT by means of logical checks. Initially, basic quality checks are applied, along with checks for completeness, accuracy and consistency of the correlating variables. Afterwards, the collected questionnaires are checked in terms of the changes in production in comparison with the previous months and with the corresponding month of the previous year. If differences either in volume or in value are rather significant (outside of a pre-established range), data are further investigated, in cooperation with the enterprises in order to confirm whether this is an erroneous value or it is just an unusual value (outlier), before

approving the questionnaire. Moreover, data are compared with the Turnover Index in Industry and data from administrative sources (VAT declarations), upon availability.

After the completion of all the aforementioned checks, the possibility of processing errors is minimized.

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.

Finally, the utilization of the new web based application for the on-line collection of questionnaires of the IPI has resulted in the enhancement of the quality of the index by offering the possibility both to the surveyed enterprises and to the personnel to monitor longitudinally, for all the period for which the enterprises participate in the sample, the data that are reported every month and to conduct further logical checks though comparisons.

11.2 Quality assessment

The Industrial Production Index is considered to be a highly reliable index. It is an index that is being compiled in Greece since 1959, so the personnel have acquired a lot of experience in its compilation. Moreover, its concepts and methodology have been developed according to European and international standards and guidelines.

12. Relevance

12.1 User needs

The Industrial Production Index meets national needs as well as needs to fulfil obligations arising from the implementation of European Regulations. Generally, the IPI provides statistical information, which is necessary for improving the competitiveness and performance of the business sector.

The main national users of IPI are the government, other public agencies, the Central Bank of Greece, other Hellenic banks, the Hellenic Federation of Enterprises (SEV), the Union of Steel Industries, the Foundation for Economic and Industrial Research (IOBE), the Centre for Planning and Economic Research, enterprises and chambers etc., while at international level, the Index is used by Eurostat, the International Monetary Fund (IMF), the United Nations (UN), etc.

The compiled index covers the wide range of users' needs: as concerns domestic market, the index is used as a tool providing useful information on the activities, competitiveness and productivity of the business sector, thus helping the government in drawing economic policy and entrepreneurs or other agencies in decision making concerning their taking up several initiatives. At European level, there is the need for fully comparable statistics in order to draw the European economic policy.

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:

http://www.statistics.gr/en/user-conference-2019.

12.3 Data completeness

The compilation of Industrial Production Index and the data provided are in line with the relevant EU Regulations.

13. Accuracy and reliability Top

13.1 Overall accuracy

The index is characterised by high accuracy. Nevertheless, 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 the different stages of the data processing. Regarding response, the percentage of enterprises, which actually report data on time for the first release of the index, is relatively satisfying, taking into account that missing values usually refer to less significant enterprises.

Concerning accuracy of first estimates, it should be noted that the common practice for routine revisions of IPI is that the data released for the reference month are provisional and are published together with the revised data of the previous months. 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 method, 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 IPI, only unit non-response is relevant. Item non-response is not relevant, as for the survey of IPI only one variable (e.g. production) is collected. The survey is compulsory. In the first data release for the reference month, the response rate is around 90%, whereas when the index is revised for the first time, along with the release of the next month the response rate reaches 95%. 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 September 2020 for the first released data, the unweighted response rate was 89.9%, whereas the weighted response rate was 92.7% (the weighting variable used is turnover).

In order to increase the response rate, 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:

   a.   the data of the previous months/years for the specific enterprise
   b.   the evolution of the corresponding sector in which the enterprise belongs
   c.   data from administrative sources (VAT data) where appropriate.

b. Item non - response

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

13.3.1 Coverage error

The coverage of the sampling frame cannot be fully assessed because it is not possible to identify all enterprises which manufacture goods, since the Business Register of ELSTAT does not provide information on products but only on economic activities. Hence, the coverage of the survey is generally assessed by using as a reference point the turnover of the enterprises.

13.3.1.1 Over-coverage – rate

In cases where an enterprise is found to be out of the scope of the survey, e.g. it has no productive activity,

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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 appropriately adjusted for each enterprise, with the products concerning the regular production of the enterprises being pre-printed. The questionnaire is accompanied with concrete instructions on the filling and also encourages the reporting of new products. 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 months or years. Moreover, comparisons with data of other similar variables for which data are also collected (e.g. turnover) at the unit level are taking place regularly. 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 electronic collection dominates. The majority of enterprises (especially the most significant ones) report data electronically, through a special designed web application and this proportion has increased during the last years. This application offers the possibility both to the surveyed enterprises and to the personnel to monitor longitudinally the data reported every month (covering the whole period of participation in the survey) and to conduct further logical checks through comparisons. The electronically collected data are transferred also automatically in the database from which the index is calculated by means of specialised software. The above-described procedure minimise as well the errors of data entry. Coding of the data is not applicable in the case of IPI.

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

14.1 Timeliness
The index is published 40 days after the end of the reference month.

14.2 Punctuality
Industrial Production Index is published according to the pre-announced release calendar.

15. Coherence and comparability

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 Industrial Production Index and the other national and European indices, taking always into account any special conditions prevailing 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 IPI.

15.2 Comparability over time

The available full time series of the revised Industrial Production Index (2015=100.0) consists of the backcasted indices for the period 2000-2014 and of the re-calculated indices using the new weighting scheme from the year 2015 and onwards.

Therefore, the time series of the IPI with base year 2015=100.0, which is available from January 2000 onwards, is considered fully comparable over time.

15.3 Coherence cross-domain

Regular crosschecks are carried out on the basis of information from the other surveys.

The results of the Index are compared with results from the Annual Industrial Survey (SBS) and the Annual Survey of Production and Sales of Manufactured Products (PRODCOM), once the annual results are made available. In addition, crosschecks are carried out with other data such as data on turnover in industry.

15.3.1 Coherence – sub annual and annual statistics

Comparability with PRODCOM

Once a year, upon availability of the PRODCOM results, the percentage change of the deflated value of production from PRODCOM survey between two consecutive years at 2-digit level of NACE Rev.2 is compared with the respective percentage change of the IPI.

Overall, the coherence between IPI and PRODCOM is considered satisfying. The differences between the two sources leading to some degree of incoherency, especially in certain divisions, are the following:

- *Coverage:* The PRODCOM survey is conducted on a census basis, collecting data on production for all products and for all statistical units, whereas IPI is compiled on the basis of a sample survey (sample of both units and products).
- *Frequency of register update:* IPI is compiled on the basis of a common sample of enterprises used for every month, which is updated only when the index is revised with the introduction of a new base year (every five years), while PRODCOM's register is updated annually, except for very big enterprises, but without revision of data for the previous years. The common sample of enterprises used in the IPI ensures accurate presentation of the evolution of the index over several time periods.
- *Timeliness:* The survey of the IPI is conducted just after the reference month, whereas the PRODCOM survey is conducted at a later stage, after the end of the reference year.
- *Weighting:* For the compilation of the higher-level aggregates of IPI, the lower-level indices are weighted by value added at factor cost taken from the SBS survey for the base year (for instance, 2-digit level indices are calculated as the weighted average of the corresponding 4-digit level indices), whereas PRODCOM data are not in any way weighted.
- Data collected from the PRODCOM survey are limited to products for civil uses only. Products for military use are omitted. The same does not apply for the Industrial Production Index.

Comparability with Annual Industrial Survey (SBS)

The results of the two surveys are regurarly compared. The differences of the two surveys, except for those already mentioned for PRODCOM – IPI comparison, are the following:

- the different definitions (i.e. production value) and provisions of each survey,
- the difference in the valuation of the value added, at current prices for SBS and at constant prices for IPI.

15.3.2 Coherence – National Accounts

The IPI is used for the compilation of National Accounts (Annual and Quarterly), according to the output approach.

Nevertheless there are some observed differences in the growth rates which are due to the following:

- *Definition:* The definitions of the variables between the STS surveys and National accounts are not identical.
- *Weighting:* The composition of the sectors in the two surveys is dissimilar. In the IPI survey, the weights are based on data of the base year (t_0), whereas in National Accounts, the weights refer to data of the previous year (t-1).
- *Coverage:* IPI is compiled on the basis of a sample survey (sample of both units and products). Moreover, the sampling frame in most of the cases consists of units with average annual employment of 10 persons and more. On the other hand, the coverage of National Accounts is exhaustive, with data referring to total economy.

15.4 Coherence - internal

Industrial Production Index is internally coherent. For gross and working day adjusted data, higher-level aggregates derive from their components according to well-defined procedures. The aggregates of seasonally adjusted data are coherent with MIGs. The time series of MIGs and NACE 2-digit sectors are directly seasonally adjusted.

16. Cost and burden

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 IPI, the annual cost in hours worked amount to 6,153. 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 3.2 hours per enterprise or totally 3,073 hours for all enterprises.

During the last years, there has been a substantial reduction in the response burden, as the following actions have been undertaken by ELSTAT:

- Design and development of a new web-based application for data collection of production and turnover and further promotion of this application. The web application offers the surveyed enterprises the possibility to provide the requested information in an easy and fast way.
- Utilisation of data from administrative sources (VAT declarations) where appropriate, especially for small and medium size enterprises, instead of data collection.

17. Data revision

17.1 Revision policy

The general revision policy adopted for ELSTAT, which is also applied to IPI, 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 Industrial Production Index is published 40 days after the end of each reference month. Data for the reference month are provisional when first released and are published together with the revised data of the previous months. The index is revised and considered to be final after the yearly correction, which is normally undertaken within the first semester of the year (usually in June) following the reference year. These monthly 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 quarterly or 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:

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 in fully revised every five years, with the change of the base year and the implementation of new weighting scheme. Major revisions are pre-announced to the public through a special methodological paper, named "Information note on the revision of Industrial Production Index (IPI)", containing detailed information about the revision. This note is available at the link:

http://www.statistics.gr/en/statistics/-/publication/DKT21/-.

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 for all kind of revisions 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 in 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 "Information note on the revision of Industrial Production Index (IPI)", containing detailed information about the revision. This note is available at the link:

http://www.statistics.gr/en/statistics/-/publication/DKT21/-.

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 IPI from January 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 monthly 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 IPI is that the data released for the reference month are provisional and are published together with the revised data of the previous months. 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. This monthly correction is on account of the delayed reporting of some enterprises.

More specifically, for the period January 2018 – December 2020 (36 months) and for the general index B_C_D, the following Quality Indicators have been calculated:

Growth rates for unadjusted data (yoy):

MAR = 0.316, RMAR = 0.097, MR = 0.015

Growth rates for working day adjusted data (yoy):

MAR = 0.317, RMAR = 0.115, MR = 0.012

Growth rates for seasonally adjusted data (mom):

MAR = 0.612, RMAR = 0.300, MR = 0.072

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

18. Statistical processing

18.1 Source data

ELSTAT uses a statistical survey in order to calculate the Industrial Production Index. The sampling frame is based on the results of the annual survey of the Production and Sales of Industrial Products (PRODCOM), the Annual Industrial Survey, of the year 2015, all carried out by ELSTAT.

The survey for the Industrial Production Index (2015=100.0) covers a total of 325 products. Their selection is based on the results of the production / sales value at 6-digit and 8-digit level of the 2015 PRODCOM survey. The surveyed products are measured either in output quantities or in production value or sales value, according to the specific features in each branch of economic activity.

The sampling unit used is the KAU, which in the majority of cases identifies with the enterprise, according to Regulation 1165/1998 on Short-Term Statistics (Article 12). The sample size amounts to 1,263 enterprises out of a total population of 5,788 enterprises according to the 2015 PRODCOM survey. The majority of the enterprises of the sample has employment of 10 persons and more, similar to the PRODCOM survey. However, in some cases, depending on the representativeness of the product and of the turnover, enterprises that employ less than 10 persons are surveyed as well. The units of the sample are selected on the basis of purposive sampling so that they a) produce the selected products and b) represent at least 40% of the total production value at the 4-digit level of economic activity and 70% of the total production value at the 2-digit level of economic activity. The surveyed enterprises of the sample cover more than 85% of total production value of the 2015 PRODCOM survey.

18.2 Frequency of data collection

Data are collected on a monthly basis.

18.3 Data collection

Data are collected through a specially designed questionnaire, which is appropriately adjusted for every enterprise. The products concerning the regular production of the enterprises are pre-printed in the questionnaire and the volume of their production during the reference month is required to be filled in. The questionnaires are sent by post, email or fax and they are collected by means of the following ways:

-via the new web-based application for data collection of the surveys for the compilation of short-term indices in industry and construction (https://circa.statistics.gr/pls/htmldb/f?p=301) (available only in EL)

-via post

-via fax

-via e-mail.

In case of non-response, the surveyed enterprises that have not submitted their data, are contacted by telephone, or are sent reminder e-mails. The competent staff may even visit the enterprise in order to achieve cooperation.

18.4 Data validation

At national level, data processing involves checking the data derived from respondents with the aim of identifying (and eventually correcting) 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 in order 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 months. 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 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 received, using validation rules implementing in the data feeding software. In case any inconsistencies are identified in the validation process, further clarifications may be needed by the Member States. Then Eurostat proceeds to the validation and publication of data.

18.5 Data compilation

The revised Industrial Production Index refers to Greece total and is calculated by using the Laspeyres formula, as follows:

For every four-digit level, k, the index is calculated using the formula:

$$I_k^{(t)} = \left(\sum_{i=1}^{n} w_{ki}^{(0)} \cdot \frac{q_{ki}^{(t)}}{q_{ki}^{(0)}} \right) \times 100$$

where:

n : the number of surveyed products at the four-digit level k

$q_{ki}^{(t)}$: the monthly quantity of product i produced by the surveyed enterprises at the four-digit level k during the month t

$q_{ki}^{(0)}$: the average monthly quantity of product i produced by the surveyed enterprises at the four-digit level during the base year (2015), which is computed as follows:

$$q_{ki}^{(0)} = \frac{\sum_{t=1}^{12} q_{ki}^{(t)}}{12}$$

Moreover,

$w_{ki}^{(0)}$: the weighting coefficient of the product i at the four-digit level k, calculated as follows

$$w_{ki}^{(0)} = \frac{p_{ki}^{(0)} \cdot q_{ki}^{(0)}}{\sum_i p_{ki}^{(0)} \cdot q_{ki}^{(0)}}$$

where:

$p_{ki}^{(0)}$: the price of product i at the four-digit level k during the base year 0,

$q_{ki}^{(0)}$: the amount of the product i of four-digit level k in the base year 0, according to the survey data PRODCOM year 2015.

The indices at four-digit level refer to calendar months, which are unequal in terms of number of working days, and therefore these indices are not comparable. For comparability reasons, indices are adjusted on the basis of the number of working days and recalculated as <u>typical month</u> indices of equal duration ($I_k'^{(t)}$). The adjustment is made by multiplying the indices of four-digit level k by an appropriate correction factor (α_t) which is different for each month and is calculated by dividing the mean monthly number of working days of the current year by the number of working days of month t as follows:

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

where:

$\overline{x}$: the average monthly number of working days of the current year,

x_t: the number of working days in month t.

The number of working days is distinguished into the following categories according to the working days of the production unit:
1. All the days of the year except Sundays and excludable days (e.g. official holidays, national days, Christmas, Easter, etc).
2. All the days of the year except excludable days.
3. All the days of the year and
4. Seasonal (which have production only in a few months during the year).

These weighting coefficient are reviewed annually.

At the higher levels of NACE Rev. 2 (three-level, two-level, Sections, Main Industrial Groupings etc), the unadjusted ($I^{(t)}$) and adjusted ($I'^{(t)}$) for working days index for the month t is compiled as follows:

$$I^{(t)} = \sum_k w_k \cdot I_k^{(t)}$$

$$I'^{(t)} = \sum_k w_k \cdot I_k'^{(t)}$$

where:

$$w_k = \frac{y_k}{y}$$

k : the four-digit level that belongs to the three-digit or two-digit and so on level,

y_k: the annual value-added of the enterprises of the four-digit level k for the base year, according to the results of the 2015 Annual Industrial Survey,

y : the annual value-added of all the four-digit levels which compose the three-digit or two-digit level etc, according to the results of the 2015 Annual Industrial Survey.

The backcasted monthly and annual indices at each level k for the period January 2000 - December 2014 were calculated on the basis of the average annual indices of sections in 2015, according to the formula:

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

where:

$$b_\kappa = \frac{100}{\overline{R}_{\kappa(2010)}^{(2015)}}$$

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

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

$\overline{R}_{k(2010)}^{(2015)}$: the average annual index of the level k in the year 2015 with the base year 2010.

Indices from 2015 onwards have been calculated using the new weights and new production data of products.

More information on the methodology on the compilation of the IPI are available on the portal of ELSTAT and more specifically in the methodological note of the index at:

http://www.statistics.gr/en/statistics/-/publication/DKT21/-.

18.5.1 Imputation – rate
The percentage of the data that are imputed is about 5%.

18.6 Adjustment

Deflation
For some products, the value rather than the volume is recorded. For these cases, the data are adjusted by removing price changes due to inflation in order to isolate the actual volume development. The deflation is carried out with the base year 2015 and the deflators are calculated for the respective 8-digit or 6-digit level. The Producer Price Index in Industry is used as a deflator. Afterwards, the individual data are divided by the corresponding deflators, in order to obtain the deflated data. In total, 37% of the products surveyed for the compilation of the IPI are deflated.

Calendar adjustment
The initial data refer to calendar months, which do not all have the same number of working days (e.g. February, March, etc.), 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 four-digit level k by an appropriate correction factor (α_t) which is different for each month and is calculated by dividing the mean monthly number of working days of the current year by the number of working days of month t as follows:

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

where:

$\overline{x}$: the average monthly number of working days of the current year,

x_t: the number of working days in month t.

These weighting coefficient are reviewed annually.

The enterprises are classified into 4 groups depending on the number of days they operate every month.

The groups are:

1. Enterprises that operate all the days of the year except Sundays and excludable days (e.g. official holidays, national days, Christmas, Easter, etc).
2. Enterprises that operate all the days of the year except excludable days.
3. Enterprises that operate all the days of the year and
4. Enterprises that operate only a few months of the year (seasonal).

18.6.1 Seasonal adjustment

In order to remove the impact of seasonality on the time-series and improve the comparability over time, the index is seasonally adjusted. The method used is the TRAMO-SEATS method with the use of JDemetra+ 2.0.0.

For the seasonal adjustment of the Industrial Production Index at 2-digit level of NACE Rev.2, at section level (B –

Mining and Quarrying, C – Manufacturing, D – Electricity Supply and E – Water Supply) and for the Main Industrial Groupings (MIGs), the direct approach is applied, namely each time-series is seasonally adjusted independently. For the overall Industrial Production Index, the indirect approach is applied, with the seasonally adjusted IPI being computed by aggregating the seasonally adjusted MIGs using appropriate weights.

The whole series with seasonally adjusted indices is recalculated every time a new observation is added in the time-series. The seasonally adjusted indices may differ from 100 for the base year, as the seasonal effect is not the same each year.

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

http://www.statistics.gr/en/statistics/-/publication/DKT21/-.

19. Comment	Top
None	