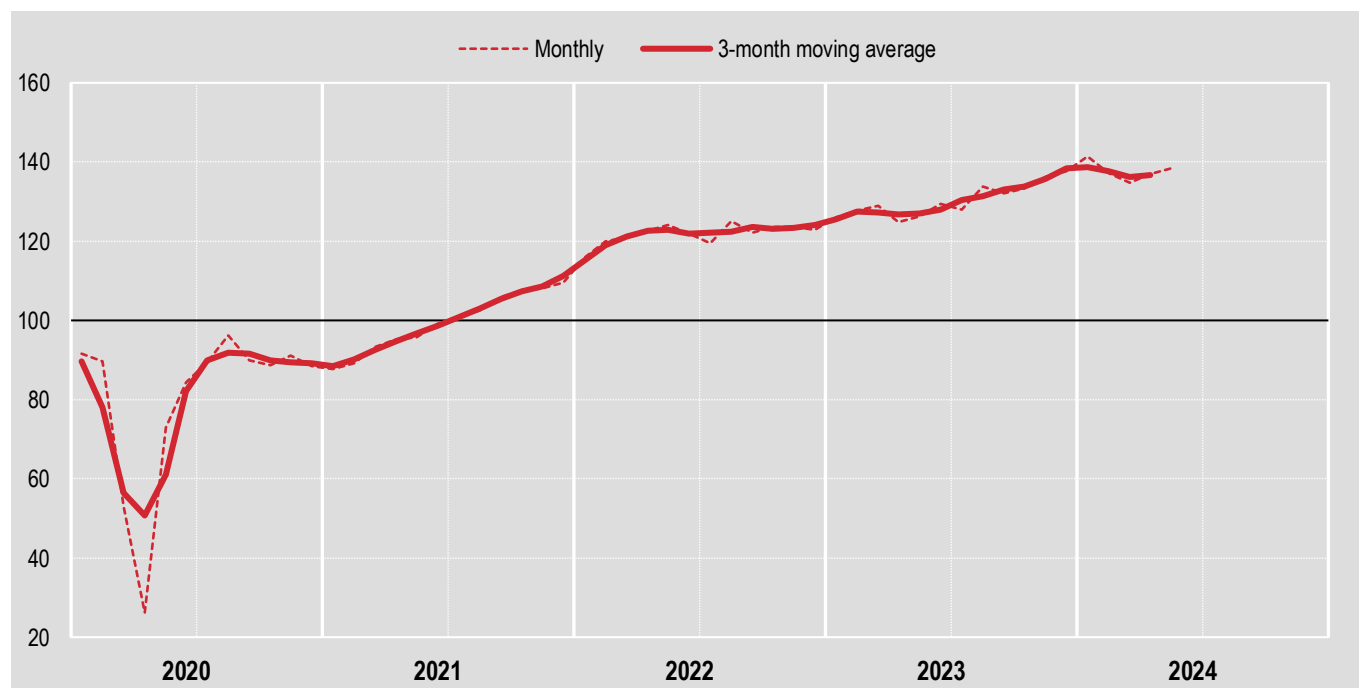


May 2024

## PRODUCTION IN CONSTRUCTION

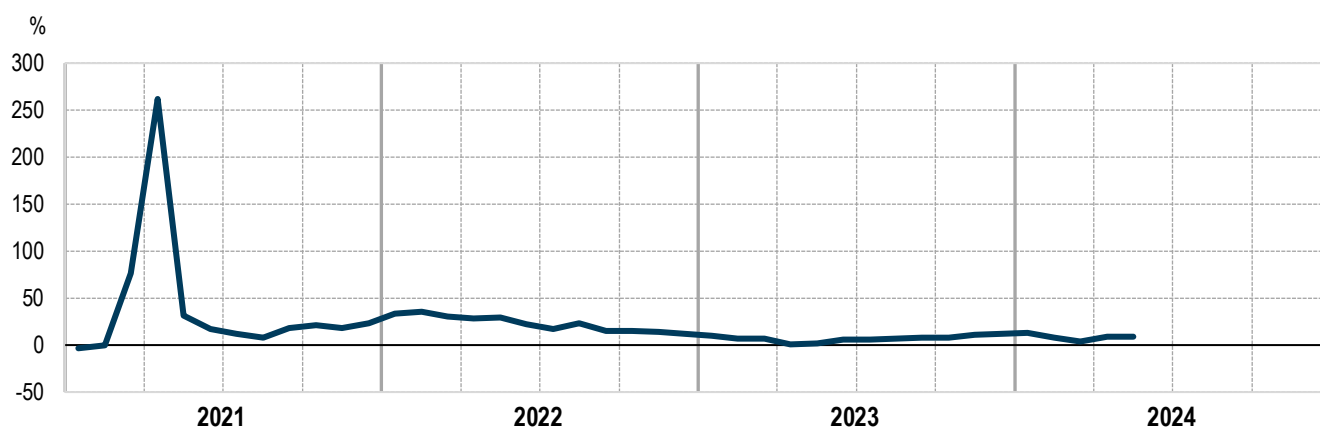
- In May 2024, the seasonally adjusted index of production in construction is estimated to increase by 1.1% compared to April.
- Over the three-month period ending in May 2024, the seasonally adjusted index of production in construction decreased by 1.4% compared to the previous three month period.
- On a year-on-year basis, the calendar-adjusted index showed an increase of 9.2% (working days being 22 as in May 2023), while the unadjusted index rose by 9.3%.
- For the first five months of 2024, the calendar-adjusted index was up 8.4%, while the unadjusted index grew by 9.8%.

**CHART 1. PRODUCTION IN CONSTRUCTION, SEASONALLY ADJUSTED INDEX AND THREE-MONTH MOVING AVERAGE**  
January 2020 – May 2024 (index, 2021=100)



**CHART 2. PRODUCTION IN CONSTRUCTION, MONTH ON SAME MONTH A YEAR AGO PERCENTAGE CHANGES**

January 2021 – May 2024, calendar adjusted data (index, 2021=100)



**TABLE 1. PRODUCTION IN CONSTRUCTION, MONTHS ON PREVIOUS MONTHS AND ON SAME MONTHS A YEAR AGO PERCENTAGE CHANGES**

May 2024 (a), seasonally adjusted, calendar adjusted and unadjusted data (index, 2021=100)

	Months on previous months		Month on same month a year ago	
	May 24 Apr 24	Mar -May 24 Dec 23-Feb 24	May 24 May 23	Jan-May 24 Jan-May 23
Production, seasonally adjusted	+1.1	-1.4	-	-
Production, calendar adjusted	-	-	+9.2	+8.4
Production, unadjusted	-	-	+9.3	+9.8

(a) Data are provisional and subject to revisions.

Prior month data are subject to revisions. New observations can change the seasonal factors that are applied to the whole time series. This leads to an additional monthly revision for seasonally adjusted data.

Table 2 shows revisions between the first publication and the latest estimates published in this bulletin. Revisions to year-on-year growth rate refer to not adjusted data. Updated time series are published on the Istat data warehouse [IstatData](#).

**TABLE 2. REVISIONS TO GROWTH RATE, PERCENTAGE POINTS**

April 2024 (index, 2021=100)

	Month-on-month change	Year-on-year change
	<b>April 2024</b>	
Production in construction	-0.7	-1.6

**Working day adjusted data:** working day adjusted data correct for calendar effects within a reference period (month or quarter), which may vary from year to year. This method allows a reconciliation of asymmetries for calendar differences such as the number of working days, the week days distribution in the reference period and the occurrence of public holidays (including moving holidays like Easter) and of a leap year. Working day adjusted data facilitate better comparison of year-on-year growth rates and average annual growth rates. The indices, adjusted using regression analysis, are proportionally rescaled to ensure that the average of the base year equals 100. This adjustment preserves the underlying dynamics of the indices.

**Seasonally adjusted data:** seasonally adjusted data remove fluctuations related to seasonal factors (such as weather conditions, administrative measures, etc.,...) and calendar effects when relevant. Seasonal adjustment provides a clearer view for trend analysis of a short-term indices. Moreover, this method leads to a monthly revision of the previous years' series as updated time series components become available each month..

**Calendar working days:** days of the month other than Saturdays, Sundays and religious and secular public holidays.

**Production in construction index:** Production in construction index provides estimates of the construction output, measuring monthly changes in the sector. This indicator is defined in [Regulation \(EU\) 2019/2152](#) of the European Parliament and of the Council on European business statistics, repealing 10 legal acts in the field of business statistics (EBS-Regulation) and the Commission Implementing [Regulation 2020/1197](#) laying down technical specifications and arrangements pursuant to Regulation (EU) 2019/2152 (General Implementing Act).

**Revisions:** differences (in percentage points) between the first publication and the latest estimates for the same reference period.

**Short-term growth rate:** short-term growth rate compares a period (typically a month or quarter) with the previous period, measuring the percentage change.

**Year-on-year growth rate:** Y-o-Y compares a period (typically a month or quarter) with the same period from the previous year, measuring the percentage change.

## PRODUCTION IN CONSTRUCTION

### Introduction and regulatory framework

[Regulation \(EU\) 2019/2152](#) of the European Parliament and of the Council of 27 November 2019 (followed by the European Commission Implementing [Regulation 2020/1197](#) of 30 July 2020) entered into force on 1 January 2021, replacing the European Council Regulation No. 1165/1998.

The new Regulation defines the level of detail, methodology and frequency for the calculation of the economic indicators and data transmissions to Eurostat.

The monthly index of Production in Construction (IPC) is one of the economic indicators required by Regulation (EU) 2019/2152, to monitor and evaluate developments in the construction sector. The related Implementing Regulation (EU) 2020/1197 calls for the provision of the IPC for the entire construction sector (section F of NACE Rev.2) starting from the reference period January 2005. Moreover, from January 2021 onwards, it requires the provision of IPC broken down by NACE Rev.2 Divisions: Construction of buildings (F41), Civil Engineering (F42) and Specialized Construction Activities (F43).

The monthly Index of Production in Construction (IPC) measures all construction activities, including the production of new manufactured products and the maintenance of existing products (section F of the NACE Rev. 2 economic activity classification). The index is constructed on a fixed basis and uses 2021 as the reference year.

The compilation index is also provided for by the current Italian National Statistical Programme.

As of the press release for the reporting period January 2024, the estimation method of the IPC has been completely revised (see next paragraph) according to the EBS methodological manual for compiling the monthly index of production in construction – 2021 edition.

### Calculation source and methodology

The new methodology for calculating the IPC applies an indirect method, similar to the old method. However, the new practice introduces the use of hours worked as the sole productive input.

In particular, the IPC estimation procedure can be divided into the following phases:

- collection of hours worked in the reference month provided by the Building Workers Welfare Funds (BWWF);
- re-estimation of hours worked to account for incomplete hours recorded;
- calculation of a proxy of the total value added of construction (section F);
- estimation of the year-over-year growth of the IPC.

### Estimation of the Index

For each reference month, the estimation method uses information on hours worked from the BWWF, which are bodies responsible for managing various contractual terms at a territorial level. They collect data on the hours actually worked by workers and apprentices in the construction sector.

Through a census survey based on the 106 BWWF in Italy, Istat gathers information monthly on hours worked, on the number of workers and the number of businesses to which hours are referred. Collected data are checked for consistency accuracy. Additionally, comparisons with other Istat surveys have shown that data from the BWWF sufficiently approximate the trend of the labour input of the sector.

The provisional data on hours worked sent by the BWWF are then revalued applying coefficients, calculated on the basis on the deviation observed in the series between provisional and final data. These coefficients are calculated with regard to the geographical division of each BWWF. In general, the variance related to distribution  $j$ , for the month  $m$  of the year  $t$ , calculated for the transmission interval  $i$ , is defined by:

$$\delta_{j,m,t}^i = 100 \cdot \left( \frac{h_{j,m,t}^{\max}}{h_{j,m,t}^i} - 1 \right) \quad (1)$$

where:

$h_{j,m,t}^i$  represents the number of hours observed for geographical division  $j$ , in the month  $m$  of the year  $t$ , for the data transmission interval  $i$ ,

$h_{j,m,t}^{max}$  represents the number of hours observed for geographical division  $j$ , in the month  $m$  of the year  $t$ , for the maximum data transmission interval.

The transmission interval  $i=1,2,3,\dots$  refers to the number of months following the reference period for which the data are transmitted; for example,  $i=1$  means that the transmission of data occurs approximately 1 month after the end of the reference month,  $i=2$  means that the transmission of data occurs approximately 2 month after the end of the reference month, and so on.

The revaluation coefficient of the hours of the geographical division  $j$ , for the month  $m$  of the year  $t$ , is calculated as the average of the deviations of the same month in the previous 3 ( $k$ ) years:

$$\Delta_{j,m,t}^i = \left( \frac{\delta_{j,m,t-1}^i + \delta_{j,m,t-2}^i + \delta_{j,m,t-3}^i}{k} \right) \quad (2)$$

where:

$j$  represents all five geographical divisions (North-East, North-West, Centre, South and Islands),  
 $\delta_{j,m,t-1}^i$  is the deviation of the transmission interval  $i$  in the month  $m$  of the previous year for the division  $j$ ,  
 $\delta_{j,m,t-2}^i$  is the deviation of the transmission interval  $i$  in the month  $m$  of the second previous year for the division  $j$ ,  
 $\delta_{j,m,t-3}^i$  is the deviation of the transmission interval  $i$  in the month  $m$  of the third previous year for the division  $j$ .

This procedure produces five different revaluation coefficients and five total hours, one for each geographical division.

Subsequently, the total number of hours of each geographical division is multiplied by its expansion coefficient, generating five partial totals of hours, which are then added together to provide the value of the revalued total hours. In general, indicating  $\Delta_{j,m,t}^i$  as the revaluation coefficient for the month  $m$  of the year  $t$ , calculated for the geographical division  $j$  for the transmission interval  $i$  of the data and  $h_{j,m,t}$ , as the hours worked in the same period and related to the same geographical division  $j$  (with  $j=5$ ), the estimate of the total hours revalued for the generic month  $m$  of the year  $t$  is given by:

$$H_{m,t}^{esp} = \sum_{j=1}^5 (h_{j,m,t} \cdot \Delta_{j,m,t}^i) \quad (3)$$

The total thus obtained (3) is then adjusted with a monthly productivity coefficient, calculated using the annual National Accounting data (value added and hours worked in the construction sector). Denoting  $\pi_{m,t}$  as the productivity coefficient for the month  $m$  in the year  $t$ , a proxy of the total value added of the construction sector will be expressed by the following relationship:

$$PC_{m,t} = H_{m,t}^{esp} \cdot \pi_{m,t} \quad (4)$$

That means that an estimate of the overall value added in volume for the month  $m$  of the year  $t$  is derived from the product of the sum of the partial totals of the revalued hours worked of the geographical divisions and the monthly productivity coefficient (4). The overall volume of production thus obtained, represents a proxy for the value added of production in construction (section F). Then, the equation (4) is estimated for the same month of the previous year as well, but in this case, the value of the total hours of the month  $m$  of the previous year,  $H_{m,t-1}$ , will not be a revalued data, as by year  $t-1$ , the hours have completed the data revision cycle. The corresponding equation for the same month of the previous year will be:

$$PC_{m,t-1} = H_{m,t-1} \cdot \pi_{m,t-1}^{rev} \quad (5)$$

where:

$H_{m,t-1}$  represents the total hours unrevalued for the month  $m$  of the year  $t-1$ ,

$\pi_{m,t-1}^{rev}$  represents the productivity of the month  $m$  of the year  $t-1$ , which is periodically revised according to the data revision policy of National Accounting.

Finally, the official index for section F is calculated using the chain-linking method, applying the trend change calculated on the value added to the respective index of the same month of the previous year.

$$I_{m,t} = I_{m,t-1} + 100 \cdot \left( \frac{PC_{m,t}}{PC_{m,t-1}} - 1 \right) \quad (6)$$

where:

$I_{m,t}$  represents the IPC of the month  $m$  of the year  $t$

$I_{m,t-1}$  represents the IPC of the month  $m$  of the year  $t-1$

## Seasonal adjustment

Index of Production in Construction is transmitted to Eurostat on a monthly basis, and it is issued in three versions: the unadjusted index, which results from the calculation performed on original data, the calendar adjusted index and the seasonally adjusted index, both calculated through the TRAMO-SEATS+ software program.

To facilitate the creation of a standardized set of indices and streamline Eurostat's procedures for compiling European aggregates, the monthly indices, adjusted for calendar effects, undergo recalculation and scaling. This process ensures that they attain an average value of 100 in the base year while maintaining the integrity of the series profile. The seasonal adjustment method employed by TRAMO-SEATS+ assumes that a monthly or quarterly time series can be represented as a combination (sum or product) of different, not directly observable components: a long-term component (trend-cycle), a seasonal component capturing periodic movements of the observed phenomenon, and an irregular component due to erratic factors. The IPC is seasonally adjusted using a multiplicative decomposition.

The seasonal adjustment parameters are reviewed during the base recalculation and also during the annual IPC revision. The model currently in use provides for the presence of four outliers (three additive and one temporary change), the "leap year" effect, the "Easter" effect and the effect due to the impact of calendar working days.

Finally, as new monthly information becomes available, allowing for a better evaluation of the series' various components, the seasonally adjusted series are recalculated each month.

The exceptional variations in unadjusted data recorded during the 2020-21 health emergency were handled according to the guidelines issued by Eurostat, available at the URL:

[https://ec.europa.eu/eurostat/documents/10186/10693286/Time\\_series\\_treatment\\_guidance.pdf](https://ec.europa.eu/eurostat/documents/10186/10693286/Time_series_treatment_guidance.pdf)

## Timeliness

Istat provides a provisional estimate of the monthly value of the IPC, typically 45 days past the end of the reference month and transmits it confidentially to Eurostat, which uses these indices in the calculation of the European aggregates. Provisional estimates are then released at national level approximately 50 days past the end of the reference month.

## Coverage and territorial detail

Data are available at national level only.

## Revisions

The IPC value undergoes revisions, not only because of the base update, but also in order to reflect changes in input measures, such as hours worked and productivity coefficients. The first revision occurs in the month following the first release, to include new data on hours worked. A second revision typically takes place in March of the following year, integrating both definitive hours worked data (which complete their annual revision cycle) and new estimates from National Accounting used for monthly productivity calculations. Annual revisions continue until National Accounting releases definitive data.

For more information, please consult the Information Note accompanying the bulletin referred to January 2024 (in Italian only).

## Issue

Alongside the monthly data release downloadable from the [IstatData](#) data warehouse, a summary report with commentary is accessible on the Istat website (<https://www.istat.it/en>).

## For technical and methodological information

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