

*AGRICULTURE, LIVESTOCK, FISHERY & ENVIRONMENT STATISTICS DIVISION  
Agricultural Input-Output and Indices Section*

**METHODOLOGICAL NOTE ON THE REVISION  
OF THE INPUT AND OUTPUT PRICE INDICES  
IN AGRICULTURE – LIVESTOCK (AGRICULTURAL PRICE INDICES-API)**

**Base year 2020 = 100.0**

*Piraeus, May 2024*

## **Revision of the Input and Output Price Indices in Agriculture - Livestock**

(2020=100.0)

### General information

The Agricultural Price Indices (API) or Input and Output Price Indices in Agriculture – Livestock, measure the relative change in prices received by the producers in the agricultural – livestock sector when selling their products (Output Price Index), as well as the relative change in prices which they pay for the purchase of means (Input Price Index) required for the production process (Input Price Index).

The compilation of the API by the Hellenic Statistical Authority (ELSTAT) started in 1967 with base year 1966=100.0. Since then, there have been revisions of the indices, using as base the years: 1976, 1980, 1985, 1990, 1995, 2000, 2005, 2010, 2015 and the last revision with base year (b.y), the year 2020=100.0.

The compilation of the API is based on a voluntary agreement between the member states of the European Union (EU) and Eurostat. Based on this agreement, the indices are revised every five (5) years in years ending in 0 or 5, for reasons of comparability.

### Coverage of the indices

The API indices cover the transactions of products and services in the agriculture – livestock sector. Exceptionally, however, olive oil and must-wine transactions, which are classified in the manufacturing sector, are also covered when their processing-production is carried out by the agricultural holding and is considered as an activity of the agricultural sector.

The transactions carried out between the agricultural and livestock holdings (producers) and the commercial and industrial enterprises, refer to the sales of the produced products, as well as to the purchase of means, goods and services, necessary for the production process.

Both for output and input price indices, the selection of the products (and their varieties) for which price data are collected, is based on their participation in agricultural income and expenses in the base year 2020, as recorded in the Economic Accounts for Agriculture (EAA).

### Compiled indices

The Agricultural Price Indices are distinguished in the following two main categories:

- a) The Output Price Indices in agriculture-livestock, which are subdivided into two groups, the Crop Output Indices and the Animal Output Indices. These two groups make up the Overall Output Price Index.

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- b) The Input Price Indices in agriculture-livestock, which are subdivided into two groups, the Goods and Services Currently Consumed in agriculture-livestock Indices and the Goods and Services Contributing to Fixed Capital Formation in agriculture-livestock Indices. These two groups make up the Overall Input Price Index.

### Differences with the previous revision of the API (2015=100.0)

In relation to the products of the API of the previous revision (with base year 2015=100.0), the subgroup Vegetable Seeds has been added in the group Seeds of the Output indices.

### Weighting coefficients

#### a. Output

For the calculation of the weighting coefficients of the output price indices, the participation of the individual products in the total agricultural production value in the year 2020, as recorded in the Economic Accounts for Agriculture (EAA), was used.

The self-consumption of produced products by the farmers was deducted from the overall annual production, while product transactions between farmers were included.

#### b. Inputs

The weighting coefficients of the input price indices have been calculated as the contribution of the individual products to the total of agricultural expenditures in the year 2020, as recorded in the Economic Accounts for Agriculture (EAA), separately for the group of intermediate consumption goods and for the group of fixed capital formation goods.

### Prices collected

#### a. Output

The collected prices are the selling prices of the products from the producers (without subsidies) and are considered as producer prices, excluding VAT, transport costs and various deductions in favor of third parties.

The prices collected, refer to the prices received by the producer, when selling his products in the "trade" or "market", i.e. in commercial and industrial enterprises, with the delivery of the products in the field of the agricultural holding. When the products are delivered to the buyer's location, the cost of transportation is deducted from the product's sale price.

#### b. Inputs

The prices collected are the prices paid by the producers for buying the goods and services they need for the production process, excluding VAT and transport expenses, and refer to:

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- i. The transactions paid in cash at the shops where they buy the consumable means they need for their production.
- ii. The transactions paid in cash at the shops where they purchase the farm machinery they need, excluding VAT and transport expenses, for gross fixed capital formation.

### Data collection sources

The data sources are the commercial and the industrial enterprises, which buy the final products directly from the producers, as well as the agricultural cooperatives (unions), that collect the agricultural products. Moreover, prices are collected from various organizations that collect products from the producers, such as raisin associations, and from agencies that collect price data, such as the Ministry of Rural Development and Food.

The price data for output price index are collected from 745 sources, while for input price index from 665 sources across the country.

### Seasonality

Seasonality influences the agricultural and livestock production, having as a result, some products (outputs) not to be available in the market every month of a calendar year. Therefore, the annual weighting coefficients are allocated only in those months in which the products are available in the market.

### Calculation of the API

The monthly Input and Output Agricultural Price Indices are compiled from the individual price indices of the products and of their corresponding monthly weighting coefficients.

The Overall index of each price category (input and output) is calculated for every period  $t$  as the weighted average of the individual indices of the products  $i$  on the current period  $t$  according to the following Laspeyres type index:

$$I^t = \sum_{i=1}^n R_i^t * w_i,$$

Where:

$I^t$  is the total (overall) input or output index of the current period (month)  $t$ ,

$R_i^t$  is the individual index of the product  $i$  during the current period  $t$  (100.0 at base year 0),

$w_i$  is the weighting coefficient of product  $i$  (which is the result of the value of production or expenditure of the product  $i$  during the base year 0), with:

$$w_i = \frac{p_i^0 q_i^0}{\sum_{i=1}^n p_i^0 q_i^0}, \quad \sum_{i=1}^n w_i = 1,$$

Where:

$p_i^0$  and  $q_i^0$  are, respectively, the price and quantity of product  $i$  during the base period 0,  
 $i = 1, 2, \dots, n$  different kinds  
 $t$  = current monthly or annual period.

For the input indices (intermediate consumption, gross fixed capital formation), the calculated individual monthly index  $R_i^t$ , for the product  $i$ , for the current monthly period  $t$  for the whole country, is the simple arithmetic mean of the relevant prices of all Prefectures (NUTS III level), from where prices are collected at period  $t$ .

For the output indices (crop output, animal output), the individual monthly index  $R_i^t$ , for the product  $i$ , for the current monthly period  $t$  for the whole country, is calculated as the weighted average of the relevant prices of all Prefectures (NUTS III Level) from where prices are collected for the period  $t$ , weighted by the production per Prefecture of the product  $i$  (geographical coefficient) at the base year 2020 (production data from the Annual Agricultural Statistical Survey conducted by ELSTAT).

Average annual individual input price indices are calculated as simple arithmetic means of the monthly indices, while average annual individual output price indices are calculated as weighted averages of the monthly indices with weightings resulting from the variable production basket (which includes the products available in the market on a monthly basis).

#### Back casting of time series

The back casting calculations of the time series of the indices for the years before the year 2020, were calculated by dividing the price indices of products and groups by the corresponding price index of the year 2020 (2015=100.0), so that the changes (monthly and annual) of the indices of the time series remain the same.

The monthly and annual indices of the products for the years 2020 - 2022 were calculated as follows: initially the monthly indices of the products were calculated as mentioned above and then the monthly and annual output and input group indices were calculated on the basis of the individual product price indices and the new weights (2020=100.0).

From the reference year 2023 onwards, the monthly and annual indices are calculated based on the new weights (2020=100.0).

Agricultural Price Indices

Tables 1 and 2 below present the weighting coefficients of the groups and sub-groups of inputs and outputs in the 2015 and 2020 revisions, as well as the average annual input and output price indices for the years 2021-2023 and the 1st quarter of 2024, with base year 2020=100.0.

<b>Table 1. Weighting Coefficients in 2020=100.0 revision, comparing with 2015=100.0 revision</b>									
<b>Annual average output price indices in Agriculture-Livestock for 2021 - 2023 and</b>									
<b>Monthly Price Indices in 2024, with base year 2020=100.0</b>									
		Annual Weighting Coefficients							
<b>Code</b>	<b>Description</b>	<b>2015</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024-01</b>	<b>2024-02</b>	<b>2024-03</b>
	AGRICULTURAL GOODS								
140000	OUTPUT	100,000	100,000	110.9	125.6	144.8	164.7	162.9	162.4
100000	CROP OUTPUT	71,720	79,487	113.1	127.3	145.7	175.2	172.7	170.8
10000	Cereals (including seeds)	8,270	6,836	129.2	175.7	136.2	129.4	129.0	129.1
20000	Industrial crops	5,602	6,073	139.0	155.1	130.9	132.2	100.7	100.7
30000	Forage plants	4,839	6,223	106.7	135.9	147.0	151.4	152.5	157.2
40000	Vegetables and horticultural Products	16,410	18,141	104.0	118.6	144.8	143.7	141.5	140.3
50000	Potatoes (including seeds)	2,129	2,149	101.6	129.3	143.9	152.6	153.7	154.8
60000	Fruits	22,692	32,187	110.0	110.4	127.9	135.5	138.1	147.6
70000	Wine (incl. must)	295	229	97.0	102.0	109.4	112.5	112.5	112.5
80000	Olive oil	11,330	6,748	123.7	152.9	261.3	368.0	368.7	363.5
90000	Other crop products	153	902	102.1	106.7	112.8	113.6	114.1	114.8
130000	ANIMAL OUTPUT	28,280	20,513	102.8	118.8	141.5	147.6	146.8	146.3
110000	Animals	12,883	8,231	103.3	118.6	133.0	132.2	132.8	132.7
120000	Animal products	15,397	12,282	102.4	119.0	147.2	153.9	153.6	153.2

Table 2. Weighting Coefficients in 2020=100.0 revision, comparing with 2015=100.0 revision									
Annual average input Price Indices in Agriculture-Livestock for 2021 - 2023 and									
Monthly Price Indices in 2024, with base year 2020=100.0									
Code	Description	Annual Weighting Coefficients		2021	2022	2023	2024-01	2024-02	2024-03
		2015	2020						
220000	INPUT TOTAL	100,000	100,000	106.4	129.6	132.8	132.6	133.0	132.5
200000	GOODS AND SERVICES CURRENTLY CONSUMED IN AGRICULTURE	83,208	73,499	108.1	136.5	137.3	136.3	136.7	136.1
201000	Seeds and planting stock	4,809	5,536	101.5	109.5	115.2	114.4	114.9	115.2
202000	Energy and lubricants	22,319	15,444	114.8	161.6	147.9	147.7	151.2	149.1
203000	Fertilizers and soil improvers	5,234	5,139	106.6	164.5	170.3	153.2	153.2	152.7
204000	Plant protection products and pesticides	4,590	3,956	101.1	110.2	115.6	115.7	115.8	115.9
205000	Veterinary expenses	1,466	536	103.4	108.1	113.9	115.9	116.2	116.5
206000	Animal feedingstuffs	34,571	34,073	108.8	135	137.7	135.9	135.0	134.6
207000	Maintenance of materials	3,821	3,440	100.8	114	123.3	125.5	125.5	125.5
208000	Maintenance of buildings	319	260	102.9	119.6	130.8	132.0	132.1	132.0
209000	Other goods and services	6,081	5,114	102.4	111.4	123	137.4	137.3	137.3
210000	GOODS AND SERVICES CONTRIBUTING TO AGRICULTURAL INVESTMENT	16,792	26,501	101.9	110.4	120.2	122.3	122.7	122.7
211000	Materials	14,519	24,931	101.9	110.4	120.4	122.4	122.8	122.8
211110	Rotovators and other 2 wheel equipment	1,436	2,067	102.3	113.8	134.6	137.7	138.1	138.1
211120	Machinery and plant for cultivation	2,899	3,638	103	119.2	134.0	135.7	135.9	136.0
211130	Machinery and plant for harvesting	2,372	3,581	100.7	103.1	106.3	107.0	107.0	107.0
211140	Farm machinery and installations	3,260	7,514	103	112.3	121.7	122.3	122.4	122.5
211210	Tractors	858	1,491	100.4	108	117.7	120.2	120.4	120.6
211290	Other vehicles	3,695	6,640	100.7	106.8	115.1	119.2	120.2	120.2
212000	Buildings	2,273	1,570	102.6	111.5	118.5	121.2	121.6	121.7