

Consumer prices indices Basket, weight structure and survey updates Year 2017

As every year, Istat reviewed the list of items included in the consumer price index basket. The update takes into account the novelties of the household spending patterns and enriches, in some cases, the range of products which represent consolidated consumption.

The 2017 basket for the Italian consumer price indices for the whole nation (NIC) and for blue and white-collar households (FOI) is made up of 1,481 elementary products (1,476 in 2016), which are grouped into 920 products and 405 aggregates.

The 2017 basket for the Italian harmonized index of consumer prices (HICP) is made up of 1,498 elementary products (1,484 in 2016), grouped into 923 products and 409 aggregates.

In 2017, *Preparations of meat to be cooked, Preparations of vegetable and/or vegan products, Blended fruits and vegetables consumed at the bar, Craft beer, Smartwatch, Wrist devices for sports activities, Soundbar, Action camera, Inkjet Cartridge, Dryers, Centrifuges and Housing Insurance Services* have been included. The product *Traditional Video Cameras* has been removed from the basket.

In total 706,500 price quotes are collected each month; 493,000 of them are collected locally by the Municipal Offices of Statistics (MOS) and 137,500 are collected directly by Istat. About 76,000 quotes are collected from automotive fuels prices database of the Ministry of Economic Development.

As in 2016, data coming from 80 municipalities are processed to estimate monthly inflation; the survey territorial coverage, with reference to provincial population, is equal to 83.7%.

An additional group of 16 municipalities participate in the territorial survey with regard to a subset of products (local tariffs and some services). Their weight on the NIC basket is 6.0%, while the territorial coverage is 92.4%.

Starting from 2017, the consumer prices of automotive/motor fuels (petrol, gas oil, LPG and methane) are collected directly by Istat for the whole national territory. The survey uses information provided by 13,596 petrol stations (69.3% of those which are active and present in the data base of the Ministry of Economic Development).

In the municipalities, prices are collected in about 41,700 statistical units (including outlets, enterprises and institutions) and rents are collected for about 8,000 dwellings.

With regard to expenditure divisions in the updated 2017 NIC basket, the weights for *Transport and Clothing and footwear* grow, and decreases that for *Housing, water, electricity, gas and other fuels*. The highest weight is still for the *Food and non-alcoholic beverages* (16.50%) division, followed by *Transport* (13.93%) *Restaurants and hotels* (11.49%) and *Housing, water, electricity, gas and other fuels* (10.73%).

With regard to type of products, the weight of *Services* increases slightly (from 46.28% to 46.39%), at the expense of *Goods* (from 53.72% to 53.61%). This is mainly due to the growth of the weights of *Services related to transport* and *Services related to recreation, including repair and personal care* and to the decrease of the weight of *Energy, Food including alcohol and Tobacco*.

The update of the 2017 basket of goods and services

The 2017 basket for the Italian consumer price index for the whole nation (NIC) and for blue and white-collar households (FOI) is made up of 1,481 elementary products which are grouped into 920 products and into 405 product aggregates (they were 1,476 in 2016, grouped into 901 products and 400 product aggregates). The 2017 basket for the Italian harmonized index of consumer prices (HICP) is made up of 1,498 elementary

products, which are grouped into 923 products and then into 409 product aggregates (they were 1,484 in 2016, grouped into 906 products and 404 product aggregates)¹.

TABLE 1. CLASSIFICATION STRUCTURE FOR NIC AND FOI INDICES. YEAR 2017

Year 2017
12 expenditure divisions
43 product products
102 product classes
229 product sub-classes
302 consumption segments
405 product aggregates
920 products
1,481 elementary products

As usual, the revisions made to the basket in 2017 are different in nature and designed to capture the evolution of the consumer spending habits. The basket of consumer prices is by now so complete and detailed that the number of products entering and leaving the price collection each year is really limited.

The following new products are brought in the basket (Table 2):

- ▶ *Preparations of meat to be cooked*, that expand the range of products in the aggregate product *Minced meat preparations* Their inclusion is designed to represent the growing demand for ready-to-cook products.
- ▶ *Preparations of vegetables and/or vegan products*, in the segment *Other processed or preserved vegetables*, to meet the recent evolution of consumer spending behavior.
- ▶ *Blended fruits and vegetables consumed at the bar*, which increase the range of products of in the aggregate product *Non-alcoholic beverages at the bar*.
- ▶ *Craft beer*, which enriches the aggregate product *Lager Beers*.
- ▶ *Smartwatch*, in the consumption segment *Mobile phone*, to meet the recent evolution of consumer needs of technology products.
- ▶ *Soundbar*, which increases the aggregate product *Sound recording and reproduction machines*.
- ▶ *Wrist devices for sports activities*, that expand the product aggregate *Sports articles* and meet the recent evolution of consumer needs of technology products, such us smartwatch.
- ▶ *Action camera*, within the segment *Cameras and Video cameras*, replaces the traditional video camera.
- ▶ *Inkjet cartridges*, which increase the products within the product aggregate *Inkjet cartridge and toner*.
- ▶ *Dryers*, that complete the consumption segment *Washing machines, dryers and dishwashers* and permit to reduce the time in daily household activities.
- ▶ *Centrifuges*, which enrich the product class of *Small appliances*.
- ▶ *Housing Insurance Services*, complete the insurance products already in the basket.

In addition, to expand the coverage of the aggregate consumption (by adding products that represent them or by further articulation of products already in the basket) it is to be noted what follows:

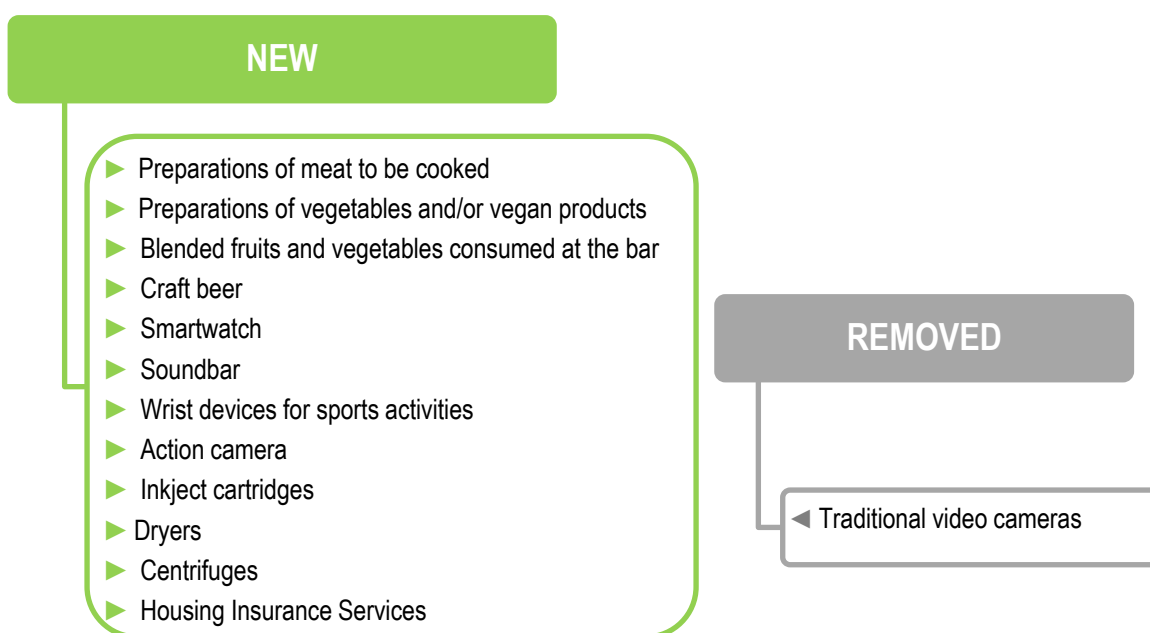
- ✓ the elementary products *Verona Red Chicory* and *Chioggia Red Chicory*, that expand the consumption segment of *Other leaf & stem vegetables*;
- ✓ the elementary products *Pink lady* or *Cripps Pink Apples* and *Round Zucchini* are included to integrate respectively the product aggregates of *Apples* and *Zucchini*;

¹ The difference between the two baskets is due to two elements: on one hand in the HICP basket (but not in the NIC/FOI one), contribution to the NHS for pharmaceutical products, specialist practices and services of medical analysis (six items) are included; on the other hand in the NIC/FOI basket (but not in the HICP one), Games of chance are included.

- ✓ the product aggregate *Bag of vegetables* now also includes the new products *Bag of fresh spinach and Onions in bag*;
- ✓ the product *Dermatologist (intramural activities)* enriches the consumption segment *Medical specialist services*;
- ✓ the *Duvet cover* improves the coverage of the consumption segment *Sheets, pillowcases and duvet covers*;

Only *Traditional Video cameras* have been dropped from the basket 2017 (the expenditure incurred by households for this product is now negligible).

TABLE 2. CONSUMER PRICE INDICES BASKET 2017: NEW AND REMOVED PRODUCTS



In the update of the basket, revisions of product denomination and of short and long description are included. The revisions have been carried out in order to adapt them to the changes in the characteristics products or to better guide data collection activity. For 2017 short and/or long descriptions of 37 elementary products have been changed.

The weighting structure

The weighting coefficients of indices are determined on the basis of the values of the household final consumption expenditure and of the household final monetary consumption expenditure (for HICP), as derived from National Accounts. Additional information used to define weights is originated from the Household Budget Survey, from other Istat surveys and from external sources, which have an auxiliary function², such as Ac Nielsen and GfK Retail and Technology Italia S.r.l. National Accounts data, used for 2017 weight structure estimates, are classified according to the European system of national and regional accounts (Esa 2010) whereas HBS data (based on the new survey) take into account the new ECOICOP.

² It should be noted that, due to the unavailability of sufficiently robust estimates of provincial consumption, in the first stage of indices aggregation the consumer price indices, chief towns of provinces contribute to the calculation of regional indices taking into account the relative importance of the province in the region in terms of population. For the calculation of this set of weights, which are based on provincial population data, in 2017, data coming from demographic balance - resident population of 2015, December, 31, have been used.

Price changes of goods and services included in the basket concur in the calculation of the All-item index with their own weight in terms of the expenditure share sustained by households to purchase them. However, in order to measure the expenditure shares with reference to the value of the computation base period of indices (December 2016), household final consumption data, referred to the year 2015, are price-updated using the price changes measured between the year 2015 and December 2016.

Table 3 shows the 2017 weighting structures by expenditure division of NIC, HICP and FOI indices and their differences. Ordering expenditure divisions according to their relative weights, the three indices, with the exception of *Health*, show relatively small differences. For all the indices the expenditure divisions with a comparatively higher weight are those of *Food and non-alcoholic beverages* (16.50%), *Transport* (13.93%), *Restaurants and hotels* (11.49%) and *Housing, water, electricity gas and other fuels* (10.73%)³.

TABLE 3. WEIGHTS USED TO CALCULATE CONSUMER PRICE INDICES BY EXPENDITURE DIVISION
2017, percentage values

Expenditure divisions	Weights		
	NIC	HICP	FOI
Food and non-alcoholic beverages	16.4968	17.5240	15.2197
Alcoholic beverages, tobacco	3.2019	3.4015	3.3659
Clothing and footwear	7.3620	8.5400	8.2030
Housing, water, electricity, gas and other fuels	10.7280	11.4100	10.7545
Furnishings, household equipment and routine household maintenance	7.2371	7.7035	6.6762
Health	8.6870	4.3047	6.8477
Transport	13.9331	14.7915	16.1530
Communication	2.6125	2.7786	3.0934
Recreation and culture	7.8409	6.2346	8.2390
Education	1.2119	1.2885	1.4700
Restaurants and hotels	11.4864	12.2115	10.8344
Miscellaneous goods and services	9.2024	9.8116	9.1432
ALL ITEMS	100.0000	100.0000	100.0000

The differences among the weighting structures of NIC, FOI and HICP indices are largely due to the different definition of the economic aggregate of reference for the three indices. This issue has relevant consequences for determining the weight of the expenditure division *Health* and in particular the weight of pharmaceutical products. The NIC and FOI indices include expenditure incurred by public administration for the household consumption of pharmaceutical products and health services, whereas it is excluded from the calculation of the HICP. Therefore the weight of *Health* in the basket of the harmonised index of consumer prices (4.30%) is significantly lower than the weight calculated for the national indices.

With regard to changes in the weighting structure of the NIC index, between 2016 and 2017 the highest increase in absolute terms concerns the expenditure division *Transport* (+0.6113 percentage points). This increase has been determined by the "revaluation effect" by which the expenditure in 2015 is reported to the index computation base period (December 2016). In the same period the expenditure division *Clothing and Footwear* increased as well (+0.1783 percentage points) because of the relative importance of "expenditure effect" on this group of products, as measured in the National Accounts 2015 compared to the previous year. Lower increases are registered for the following expenditure divisions: *Health*, *Furnishing, household equipment and routine household maintenance*, *Recreation and Culture* and, finally, *Restaurants and hotels* increased, entirely determined by the "expenditure effect" (Table 4).

³ It is pointed out that, in Italy, as in Europe, items in the division *Housing, water, electricity, gas and other fuels* exclude dwelling purchase, as it is an investment and not a consumer item, while they consider actual rentals for housing, regarding about 16.5% of Italian households according to 2011 Census data (the remaining 83.5% of households own their dwellings, or occupy them as usufructuary or free of charge).

TABLE 4. NIC INDEX: WEIGHTING STRUCTURE BY EXPENDITURE DIVISION
2016 and 2017, percentage values and absolute differences

Expenditure divisions	2016	2017	Absolute difference	Spending effect	Revaluation effect
Food and non-alcoholic beverages	16.5706	16.4968	-0.0738	0.0434	-0.1172
Alcoholic beverage, tobacco	3.2497	3.2019	-0.0478	-0.0044	-0.0434
Clothing and footwear	7.1837	7.3620	0.1783	0.2056	-0.0273
Housing, water, electricity, gas and other fuels	11.4454	10.7280	-0.7174	-0.5379	-0.1795
Furnishings, household equipment and routine household maintenance	7.1798	7.2371	0.0573	0.1085	-0.0512
Health	8.6049	8.6870	0.0821	0.1347	-0.0526
Transport	13.3218	13.9331	0.6113	-0.0338	0.6451
Communication	2.6950	2.6125	-0.0825	-0.0573	-0.0252
Recreation and culture	7.7890	7.8409	0.0519	0.0698	-0.0179
Education	1.2482	1.2119	-0.0363	0.0022	-0.0385
Restaurants and hotels	11.4490	11.4864	0.0374	0.1588	-0.1214
Miscellaneous goods and services	9.2629	9.2024	-0.0605	-0.0896	0.0291
ALL ITEMS	100.0000	100.0000			

Looking at the divisions with reduced weight, in the 2017 NIC basket the largest decrease concerns the weight of *Housing, water, electricity, gas and other fuels* (-0.7174 percentage points) and it is due to the decline of expenditure and to the revaluation effect. Lower decreases are registered for *Communication* (-0.0825 percentage points) and *Food and non-alcoholic beverages* (-0.0738 percentage points), and then for *Alcoholic beverage, tobacco*, *Education* and *Miscellaneous goods and services*.

Considering the weighting structure by type of products, in 2017 the weight of services slightly increases (+0.1319) to 46.39% from 46.28%, resuming the positive trend interrupted in 2016, while the weight of goods decreases to 53.61% from 53.72% (Table 5).

Concerning goods, in 2017 the weight of Energy decreases to 8.45% (from 8.96% in 2016), due to the component of Non-regulated energy products on which both the “expenditure” and the “revaluation effect” have an impact. The weight of Food including alcohol slightly decreases (17.53% from 17.63% in 2016) as that one of Tobacco (2.17% from 2.19% of the previous year). The increase of half percentage point of the Non-energy industrial goods (from 24.94% in 2016 to 25.46% in 2017) is mainly due to the growth of weights of Durable goods (which include cars) and to a lesser extent to Semi-durable goods (which include clothing and footwear).

Concerning Services, the largest weight increases are registered for Services related to transport (from 7.39% in 2016 to 7.61% in 2017), that reflect both “expenditure” and “revaluation” effects, and Services related to recreation, including repair and personal care (from 17.56% to 17.68%) whereas the largest decrease regards Services related to communication (from 2.10% to 1.94%) and Services related to housing (7.78% to 7.70%). With regard to Services–miscellaneous the weight is rather stable compared to the previous year.

In 2017 the weight of All items index excluding energy and unprocessed food (Core inflation) registers a slight increase (+0.5828 percentage points); the one of Grocery and Unprocessed food decreases (-0.1395 percentage points).

TABLE 5. NIC INDEX: WEIGHTING STRUCTURE BY TYPE OF PRODUCT
2016 and 2017, percentage values and absolute differences

Special aggregates	2016	2017	Absolute difference	Spending effect	Revaluation effect
Food including alcohol:	17.6293	17.5273	-0.1020	0.0318	-0.1338
Processed food including alcohol	10.5400	10.5071	-0.0329	0.0484	-0.0813
Unprocessed food	7.0893	7.0202	-0.0691	-0.0166	-0.0525
Energy:	8.9593	8.4456	-0.5137	-0.9255	0.4118
Regulated energy products	4.6894	4.1439	-0.5455	-0.3676	-0.1779
Non-regulated energy products	4.2699	4.3017	0.0318	-0.5579	0.5897
Tobacco	2.1910	2.1714	-0.0196	0.0072	-0.0268
Non energy industrial goods:	24.9402	25.4637	0.5235	0.6718	-0.1483
Durable goods	7.9828	8.4846	0.5018	0.5257	-0.0239
Non-durable goods	6.7677	6.6173	-0.1504	-0.0744	-0.0760
Semi-durable goods	10.1897	10.3618	0.1721	0.2205	-0.0484
Goods	53.7198	53.6080	-0.1118	-0.2147	0.1029
Services related to housing	7.7764	7.7003	-0.0761	-0.0663	-0.0098
Services related to communication	2.0997	1.9445	-0.1552	-0.1029	-0.0523
Services related to recreation, including repair and personal care	17.5565	17.6824	0.1259	0.2567	-0.1308
Services related to transport	7.3869	7.6089	0.2220	0.0811	0.1409
Services – miscellaneous	11.4607	11.4559	-0.0048	0.0461	-0.0509
Services	46.2802	46.3920	0.1118	0.2147	-0.1029
ALL ITEMS	100.0000	100.0000			
All items excluding energy and unprocessed food (Core inflation)	83.9514	84.5342	0.5828	0.9421	-0.3593
All items excluding energy, food, alcohol and tobacco	71.2204	71.8557	0.6353	0.8865	-0.2512
All items excluding energy	91.0407	91.5544	0.5137	0.9255	-0.4118
Grocery and unprocessed food	19.9682	19.8287	-0.1395	0.0001	-0.1396

With regard to regulated products, the weight of *Regulated goods* declines (from 7.16% to 6.54%), on the other hand the weight of *Regulated services* remains almost stable (Table 6).

TABLE 6. NIC INDEX: WEIGHTING STRUCTURE BY REGULATED AND NON-REGULATED PRODUCTS
2016 and 2017, percentage values and absolute differences

Regulated and non-regulated products	2016	2017	Absolute difference
Non-regulated goods	46.5554	47.0727	0.5173
Regulated goods	7.1644	6.5353	-0.6291
Goods	53.7198	53.6080	-0.1118
Non-regulated services	39.7575	39.8825	0.1250
Regulated services	6.5227	6.5095	-0.0132
Services	46.2802	46.3920	0.1118
ALL ITEMS	100.0000	100.0000	

Finally, concerning products by purchase frequency (Table 7) the weight of *High-frequency purchases* decreases (-0.1990 percentage points) as well as the one of *Medium-frequency purchases* (-0.3045 percentage points); instead is on the rise the weight of *Low-frequency* (+0.5035 percentage points).

TABLE 7. NIC INDEX: WEIGHTING STRUCTURE BY PURCHASE FREQUENCY

2016 and 2017, percentage values and absolute differences

Purchase frequency	2016	2017	Absolute difference
High-frequency purchases	40.1652	39.9662	-0.1990
Medium-frequency purchases	42.8972	42.5927	-0.3045
Low-frequency purchases	16.9376	17.4411	0.5035
ALL ITEMS	100.0000	100.0000	

Geographical basis and coverage rate

In 2017 the geographical basis of the survey is made up of 80 municipalities (18 regional chief towns, 61 provincial chief towns and 1 municipality with more than 30,000 inhabitants) - which contribute to the indices calculation of all the product aggregates included in the basket - and of other 16 municipalities⁴ participating in the survey for a subset of products which includes local tariffs (water supply, solid waste, sewerage collection, gas for domestic use, urban transport, taxi, car transfer ownership, canteens in schools, public day nursery, etc.) and some local services (sport events, cinemas, theatre shows, secondary school education, canteens in universities etc.).

For the whole basket, the coverage of the index, in terms of resident population in the provinces whose chief towns take part in the survey, is 83.7%. The participation of provincial chief towns is total for six regions (Valle D'Aosta, Trentino Alto Adige, Veneto, Friuli-Venezia Giulia, Emilia-Romagna and Umbria) but it is still incomplete for the others, in particular in Puglia (40.8%) and Sardegna (55.9%).

At the macro-area level, coverage is total in the North-East; it is equal to 90.4% in the North-West, 83.3% in the Centre, 66.9% in the South and 75.2% in the Islands.

Concerning the basket subset including local tariffs and some local services - whose weight on the NIC basket is equal to 6.0% - with the participation of the other 16 municipalities the coverage of the survey, measured in terms of provincial resident population rises to 92.4%. The participation becomes total for 13 regions and it is stable in the remaining regions.

Price survey methods

Data contributing to the calculation of monthly consumer price indices are traditionally collected through two distinct surveys: the local survey, carried out by municipal statistics offices, under Istat supervision and coordination, and the central survey carried out directly by Istat. In addition to these two ways an administrative source is used, i.e. the database of fuel prices of Ministry of Economic Development.

The prices of the products belonging to the expenditure division *Communication* are exclusively monitored by Istat, while prices of products included in the divisions *Food and non-alcoholic beverages* and *Clothing and footwear* are exclusively collected by the Municipal Offices of Statistics.

Local survey

In the 96 municipalities (80 for the full basket and 16 for a subset of product) taking part in the 2017 survey, prices are collected in more than 41,700 statistical units (including outlets, enterprises and institutions) and rents are collected for about 8.000 dwellings. 493,000 quotes/ are sent on a monthly basis to Istat by Municipal Offices of Statistics each month (495,500 in 2016).

⁴ They are Asti, Campobasso, Chieti, Fermo, Foggia, Frosinone, Isernia, L'Aquila, Matera, Monza, Prato, Ragusa, Salerno, Savona, Termoli e Vibo Valentia.

4.8% of the current elementary items come out from the annual update of municipal price collection plans: 1.8% is accounted for by new products, while the remaining 3.0% is accounted for by products already included in the previous year basket for which new elementary items have been selected.

The most important news in local survey is the one of *Hotel rooms* whose prices are now monitored both by Istat and via web.

Central survey

In 2017 prices/quotes collected each month directly by Istat are 137,500, of which:

✓ 137,000 via web, also using *web scraping techniques*, or collecting data from different providers. The main data providers for the central price data collection are the following:

- ▶ Italian Customs Agency, for Tobacco products and games of chance;
 - ▶ Italian Association of Concessionaries Highways and Tunnels (Aiscat), for motorway tolls;
 - ▶ Farmadati, for pharmaceutical products;
 - ▶ Italian Association of Publishers (AIE), for prices of school books;
 - ▶ Specialized magazine “Quattroruote” for prices quotes of cars and second hand cars;
 - ▶ Sanguinetti Editore, for prices of cars, motorcycles and motorbikes, caravans and motorhomes;
- ✓ about 500 quotes directly collected using the data by insurance companies.

An important news in *central survey* is that of *Housing insurance services* whose prices, monthly collected by insurance company, refer to protection against most risks connected to property, such as fire, theft and other damages.

The percentage of products observed directly by Istat calculated according to the weight assigned to each product within the NIC is 23.6% in 2017 (as the previous year).

Changes in the central price collection activities upon the occasion of the 2017 changing base regard - as usual - the revision of the samples in their composition. numbers and weighting structure as well as the introduction of methodological improvements. The main change in 2017 concerns the survey design for the data collection of prices about consumer technology products, passenger maritime transport and national rail transport.

Administrative sources

In 2017 automotive fuels price indices (the weight on the basket is 3.7%) are calculated using the data base supplied by the Ministry of Economic Development that collects prices for these products. 76,000 price quotes are monthly used to estimate inflation and they come from about 13,596 fuel stations on the territory, that is 69.3% of the ones active and present in Ministry database.

The 13,596 fuel stations cover the entire national territory and they are located in the different geographical areas as it follows: 3,600 in the North-West; 3,200 in the North-East; 3,000 in the Centre; almost 2,400 in the South and about 1,400 in the Islands.

For more details please refer to the Italian version

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