

Portuguese Food Balance Sheet

2012-2016

Food availability per adult is almost twofold the recommended consumption

Food availability for consumption in the period 2012-2016 continues to show an excessive and unbalanced food supply that has been progressively moving away from the Mediterranean food standard, in spite of the fact that some improvements have been observed in the last decade. With an average caloric intake of 3,834 Kcal, almost enough to meet the recommended consumption needs of two adults, food supply reveals imbalances when compared to the food pattern recommended by the Wheel of Food: excess supply of food products from the "Meat, fish and eggs" and "Oils and Fats" groups and deficit of "Vegetables", "Fruits" and "Dried legumes".

This five year period was marked by the last recessive cycle, particularly in 2012, which led to an outcome of less availability of the food groups when compared with the figures of the period 2008-2011. The exceptions that stood out were dried salted fish, whose apparent consumption has even grown.

When considering the daily consumption reference values of vitamins and minerals for an adult, it becomes apparent that the daily availability of these microconstituents *per capita* remains above those thresholds.

The Portuguese Food Balance Sheet (PFBS) is a statistical analytical tool based on the supply of food, aiming at the evaluation of food availability and its respective evolution in Portugal, in terms of products, nutrients and calories.

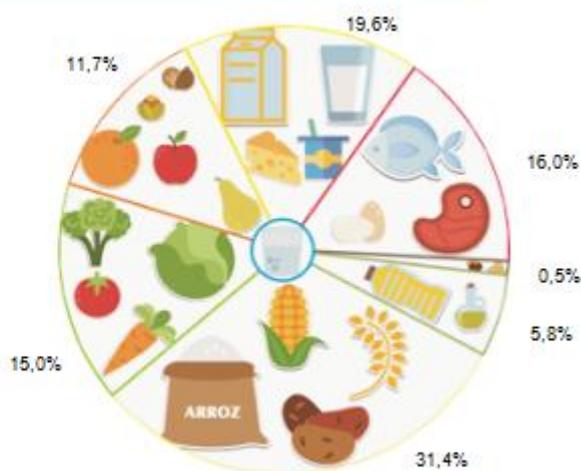
In this press release, Statistics Portugal updates and disseminates the PFBS for the period 2012-2016, extending the analysis scope to micronutrients and comparing, where appropriate, with the previous edition (2008-2011). For a more in-depth analysis the reading of the publication "[Portuguese Food Balance Sheet 2012-2016](#)" is recommended, released simultaneously with this press release. A set of harmonized and comparable statistical indicators on the PFBS for the period 1990 to 2016 is available on Statistics Portugal portal at www.ine.pt.



I. FOOD WHEEL

The food availability per capita in the period 2012-2016 decreased by 2.7% compared to the period 2008-2011, an outcome closely related to the recession of the Portuguese economy in the period 2011-2013. With an average caloric intake of 3,834 Kcal, enough to meet the recommended consumption needs of 2 adults, the food supply reveals imbalances when compared to the food pattern recommended by the Food Wheel: excess supply of food products from the "Meat, fish and eggs" and "Oils and Fats" groups and deficit of "Vegetables", "Fruits" and "Dried legumes". It should be noted that these results were already present in previous editions of the Portuguese Food Balance Sheet.

Portuguese Food Balance Sheet - 2012



Food Wheel

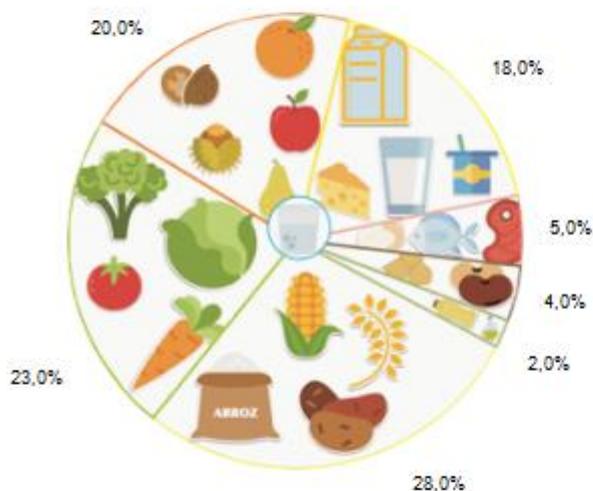
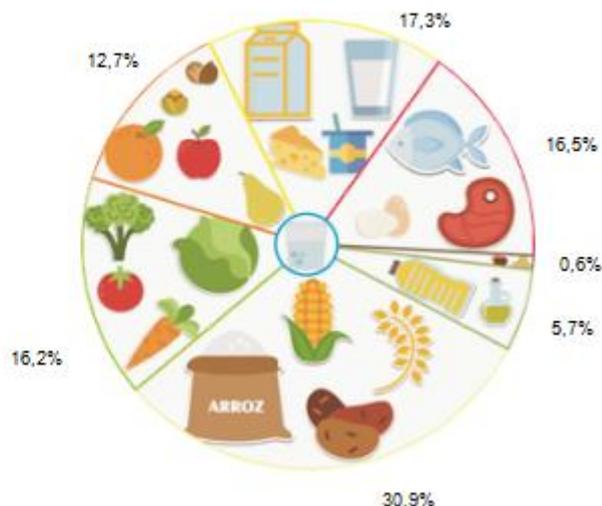


Figure adapted from the Food Wheel of Direção Geral do Consumidor

Portuguese Food Balance Sheet - 2016



In the five-year period 2012-2016, an average of 8.6 million tons of raw food was available for consumption, except in the case of beverages (8.8 million tons in the period 2008-2011). When converted to calories, there is an average caloric intake of 3 834 kcal (3 938 kcal in the period 2008-2011) with a minimum of 3 811 Kcal in 2012 (the lowest level since 2005) and a maximum of 3 895 kcal in 2016.

The information made available by the PFBS, when compared to the food patterns recommended by the Food Wheel, reveals, yet again, a distortion of the availability pattern compared to the recommended one.

The food products groups, considering the year 2016 as reference, which show the most significant deviations for the apparent consumption, by excess, are "Meat, fish and eggs" with 11.5 percentage points (pp) above the recommended consumption and, in opposition, the available supply of "Fruits" and "Vegetables" groups, with a deficit of 7.3 pp and 6.8 pp respectively.

Furthermore, the positive deviations of the food groups "Cereals, roots and tubers" and "Oils and fats" and the negative deviations of "Dried legumes" and "Milk and dairy products" should be highlighted.

II. DAILY AVAILABILITY OF FOOD PRODUCTS

In the five-year period 2012-2016, each resident in the national territory had available for daily consumption, on average, 213.3 g of meat, 54.3 g of fish, ½ egg, 332.7 g of milk and dairy products, 338.7 g of cereals, 217.1 g of potatoes, 288.2 g of vegetables, 222.2 g of fruits, 8.0 g of dried legumes, 102.9 g of oils and fats, 73.6 g of sugar, 23.7 g of stimulants, 547.7 ml of non-alcoholic beverages and 266.7 ml of alcoholic beverages.

In the five-year period 2012-2016, there were several occurrences which had an impact on food availability, namely: a recessive period of the Portuguese economy (2011-2013); the end of the milk quota system; the Russian embargo on European meat; the application of the Animal Protection Directive; the actions aiming at raising awareness of healthier eating habits.

In the five-year period 2012-2016, the average food availability for most products was lower than in the period 2008-2011, with the lowest level having been recorded in 2012. There has been a decline in the apparent consumption of meat, fish, cereals and oils and fats. On the other hand, the availability of fresh products (vegetables and fruit), potatoes, dried legumes, sugar and stimulants (coffee and chocolate) has increased. The availability of dried salted fish, which even increased its share in the fish group of products, and the supply of cereals to the animal feed industry, which remained at similar levels to those in the past, were the exceptions to this recessive cycle.

Daily availability of food products and beverages per capita

	2008-2011 average	2012	2016	2012-2016 average
 Cereals and rice	344,1	348	339,4	338,8
Roots and tubers 	208,9	209	224,6	219,8
 Sweeteners	84,3	84,1	88,3	86,8
Dried legumes 	11,0	9,6	11,2	10,7
 Vegetables	251,9	266,6	295,9	288,2
Fruit 	233,6	208,8	232,6	223,3
 Meat and offal	221,0	207,1	220,3	213,3
Eggs 	21,4	20,3	23,3	21,8
 Milk and dairy products	358,0	348,5	316,1	332,5
Fish products 	62,8	55,9	56,7	54,3
 Oils and fats	108,6	102,3	104,8	102,9
Other food products 	23,1	23,3	24,1	23,7
 Alcoholic beverages	299,3	261,1	276,1	266,7
Non alcoholic beverages 	547,7	535	580,3	547,7

Beverages in ml/inhab/day

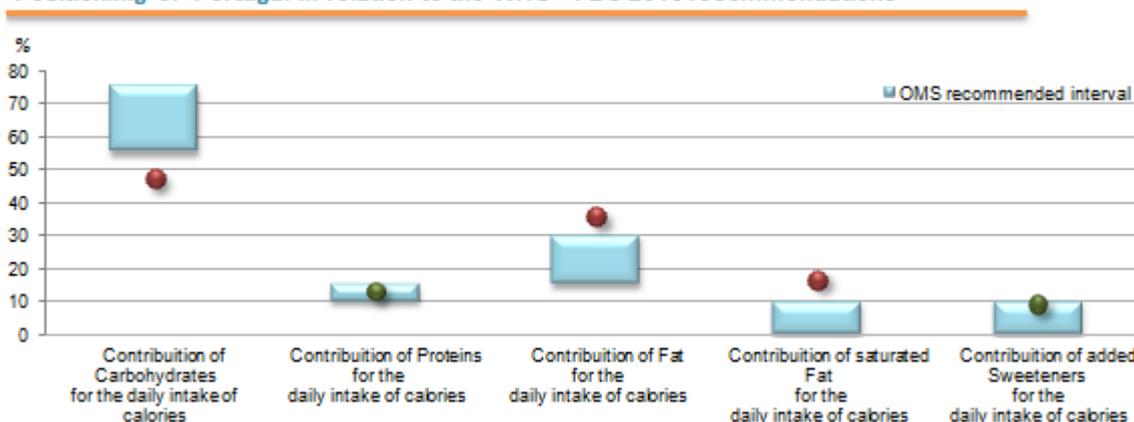
Changes in dietary habits and the end of the milk quota regime have worsened the decrease in apparent milk consumption; the drought scenario in 2012 has further reduced the availability of meat and the limits on sardine capture imposed in the framework of the management measures adopted for this resource had a strong impact on the evolution of fish catches. For some of the food products, the level of availability remained, but exports have increased, namely: maize, one of the most important arable crops in Portugal, benefited from new irrigated areas of the Alqueva irrigation perimeter, which triggered production; the Autumn/Winter cereals, the emphasis on the improvement of quality and eggs, with the entry into operation of larger production units following the process of adaptation of improved cages to comply with the European Community legislation on the protection of laying hens.

III. CONTRIBUTION OF FOOD AVAILABILITY TO THE SUPPLY OF MACRONUTRIENTS, ENERGY AND MICRONUTRIENTS

In the period 2012-2016, the available food on offer, in macronutrients terms, was equivalent to 122.3 g/inhab/day of proteins, 149.3 g/inhab/day of fats, 454.7 g/inhab/day of carbohydrates.

Having in consideration that in order to maintain a healthy dietary pattern, the contribution of carbohydrates should be about 55-75%¹ to the caloric intake of food supplies, 15-30%¹ for fat and 10-15%¹ for proteins, the energy contribution of fat calculated by the PBFS was 35.3% in 2016 (34.9% in 2012), which is higher than the recommended maximum consumption limit. The contribution of carbohydrates was 47.0% in that year (47.8% in 2012), which stood below the recommended threshold. Proteins presented an energy contribution of 12.8% in 2016 (12.7% in 2012), i.e. within the recommended threshold.

Positioning of Portugal in relation to the WHO - FBS 2016 recommendations



¹ Recommendations of the World Health Organization (WHO) and the United Nations for Food and Agriculture (FAO) within the scope of the *Joint WHO/FAO Expert Consultation*.

Nonetheless, it should be noted that these proportions are referenced to a calorific intake of 3 895 kcal (2016) therefore, when associated to a food plan that corresponds to the recommended average daily calorie intake (2000 kcal/inhab/day) and considering that the reference protein intake is 50 grams, 70 grams for fat and 260 grams for carbohydrates, the amounts calculated in the 2016 PFBS are clearly above those reference figures in absolute value in all macronutrients (proteins: 124.9 g/inhab/day, fat: 152.8 g/inhab/day, carbohydrates: 458.0 g/inhab/day).

Daily food availability of vitamins *per capita* - 2016

		Reference values ^{*1}	2016
Vitamin A	µg/inhab/day	800.0	1,131.4
Vitamin D	µg/inhab/day	5.0	4.8
Vitamin E	µg/inhab/day	12.0	33
Vitamin B1	µg/inhab/day	1.1	2.2
Vitamin B2	µg/inhab/day	1.4	1.6
Vitamin B3	µg/inhab/day	16.0	57.2
Vitamin B6	µg/inhab/day	1.4	3.3
Vitamin B12	µg/inhab/day	2.5	9.8
Vitamin C	µg/inhab/day	80.0	156

*1 Regulation (EU) No. 1163/2011, October 25 - reference daily intakes (adults)

*2 Recommendation from the World Health Organization (Sodium intake for adults and children - Guidelines 2012) - 5 g/person/day of salt (NaCl)

Daily food availability of minerals *per capita* - 2016

	Reference values ^{*1}	2016
Sodium	< 2 000 ^{*2}	1,194.5
Potassium	2 000	4,931.5
Calcium	800	951.9
Fosforus	700	1,865.7
Magnesium	375	425.1
Iron	14	14.6
Zinc	10	14.2

Taking into account the daily intake reference values of vitamins and minerals for an adult, it becomes apparent that the daily availability *per capita* of these microconstituents calculated by the PBFS in 2016 stood above these thresholds. Only in the case of vitamin D, the amounts obtained stood slightly below, indicating a deficit of this vitamin in the food supply, however this is synthesized in the human body by sun exposure.

The amounts of sodium ascertained by the PBFS refer to the naturally available mineral in the food and do not include the amount added as salt. Considering the maximum recommended WHO limit of 2 000 mg of Sodium, equivalent to 5 grams of salt, food supplies are responsible for more than half of the recommended threshold (1 194.5 mg/inhab/day in 2016).

IV. MEDITERRANEAN DIET

The food supply pattern is far from the ideal of the Mediterranean diet, however it becomes closer in years of economic crisis.

With the change in dietary habits, it becomes of major importance to verify the adherence of the food supply pattern for consumption to the Mediterranean diet.

To achieve this purpose, the *Mediterranean Adequacy Index* (MAI) was calculated, which measures the degree of adherence to the Mediterranean food pattern and was first proposed by Fidanza et al². This index results from the quotient of the percentage of energy from typically Mediterranean food groups by the percentage of energy supplied by food groups designated as non-Mediterranean.

**Mediterranean Adequacy Index
Portugal**



An index greater than 1 reveals a predominance of calories from the so-called Mediterranean products. Thus, the higher the index, the more the food supply pattern approaches the ideal of the Mediterranean food standard.

The degree of adherence to the Mediterranean diet reveals that the supply of food for consumption has progressively moved away from this food pattern, even though some improvements have been observed in recent years. In the five-year period 2012-2016, the nearest distance to the pattern of the Mediterranean diet occurred in 2012, the worst year of the economic recession that the country went through. In 2013 and 2014, the index declined again, due to a 2.3% decrease in calories from typical products of the Mediterranean Diet, mainly olive oil and cereals and a 2.3% increase in calories from other products (Meat and sugar-rich foods). The evolution of the index in the period after 2014 reflects an increase in calories from typical products of the Mediterranean diet (+3.9%), above other products (+1.6%).

² -Alberti A., Fruttini D., Fidanza F. (2009) – The Mediterranean Adequacy Index: Further confirming results of validity. *Nutrition, Metabolism & Cardiovascular Diseases* (2009) 19, 61-66.

Technical chart:

The Food Balance Sheet provides a comprehensive array of data on a country's food supply pattern during a given reference period. The balance of food products indicates for each primary product and for a small number of processed products the quantities potentially available for human consumption, i.e. they present a measure of apparent consumption from the point of view of the food supply and not the actual consumption of the food products.

Food supply

Data on food availability from the PFBS include the available quantities of food and beverage products for residents in Portugal, whether in households or outside of households (catering, canteens, hospitals, prisons, etc.). The calculation of the *per capita* availability uses the average resident population in Portugal in the reference period.

Food supply = Production + Imports - Exports - Sowing/Eggs for incubation - Animal feed - Industrial use - Processing - Losses - Changes in stocks

Available for supply

The quantity of product available (domestic production minus exports plus imports) for different uses (animal feed, processing and industrial use, sowing or incubation and human consumption).

Index of adherence to the Mediterranean diet

This index corresponds to the ratio of the supplied calories (kcal/inhab/day) by the total of the products that are part of the Mediterranean diet and the calories provided by the products that are less frequent in this diet.

The calculated index was based on the Mediterranean Adequacy Index, considering the following products:

Typical products of a Mediterranean diet - cereals, potatoes, vegetables, fruit, fish, olive oil and wine.

Products not belonging to the Mediterranean diet, or in fewer quantities - meat, eggs, dairy, vegetable oils (excluding olive oil), sugar-rich products, stimulants, alcoholic beverages (except wine) and animal fat.