

Erosion of the Mediterranean Diet in Apulia Region, South-eastern Italy: Exploring Socio-cultural and Economic Dynamics

Francesco Bottalico^{1,2,*}, Xavier Medina³, Roberto Capone¹, Hamid El Bilali¹, Philipp Debs¹

¹Sustainable Agriculture, Food and Rural Development department, International Centre for Advanced Mediterranean Agronomic Studies of Bari (CIHEAM-Bari), Valenzano (Bari), Italy

²Department of Science and Technology, Parthenope University of Naples, Naples, Italy

³Department of Food Systems, Culture and Society, Faculty of Health Sciences, Universitat Oberta de Catalunya, Barcelona, Spain

*Corresponding author: bottalico@iamb.it

Abstract Global food systems are changing rapidly with profound implications for culinary systems and diets. In this scenario, the Mediterranean diet (MD), a lifestyle recognized by UNESCO in 2010 as intangible cultural heritage of humanity, is no exception. The MD is a dynamic heritage of millennia of exchanges in the Mediterranean basin, but currently is progressively being rapidly transformed. The aim of this review paper is to contribute to a deeper understanding of the main factors, especially socio-cultural and economic ones, that have determined the rapid transformation and, consequently, the erosion of the traditional idea of the MD and the major concerns arising from decline of the adherence to this dietary pattern in Apulia region (south-eastern Italy). Different socio-cultural and economic factors such as income increase, changes in intergenerational and gender (role of women in society) relationships, different organization of working time, urbanization and globalization have had important effects on Mediterranean lifestyles thus leading to a decrease in adherence to the Mediterranean local dietary pattern. With rising incomes and urbanization, food habits with pronounced cultural differences specific to the Mediterranean region are being more westernised with increasing animal products consumption. The increased consumption of energy-dense and high-calorie products leads to an increase of obesity and diet-related diseases incidence. In fact, data of the Italian National Institute of Statistics (Istat) show a progressive increase in overweight and obesity prevalence in the adult population of Apulia; approximately 39% and 13% of adult population is overweight and obese, respectively. These data are moderately higher than the Italian average. Despite its increasing popularity worldwide, adherence to the MD model is decreasing in Apulia region under various influences. These influences seriously threaten the preservation of the local MD heritage and its transmission to future generations. Therefore, today's main challenge is to counter these influences and reverse the trends in the MD by implementing appropriate policies supported by research activities and bottom-up and multi-stakeholder initiatives.

Keywords: Mediterranean diet, Apulia region, Italy, diet erosion, food system

Cite This Article: Francesco Bottalico, Xavier Medina, Roberto Capone, Hamid El Bilali, and Philipp Debs, "Erosion of the Mediterranean Diet in Apulia Region, South-eastern Italy: Exploring Socio-cultural and Economic Dynamics." *Journal of Food and Nutrition Research*, vol. 4, no. 4 (2016): 258-266. doi: 10.12691/jfnr-4-4-10.

1. Introduction

Food systems around the world are changing rapidly with direct implications for culinary systems, diets and food consumption outcomes. A whole range of factors as food availability, food accessibility and food choices variably affect food consumption. All these elements may be influenced by geography, demography, socio-economic status, urbanization, globalization, religion, culture or marketing [1,2]. However, the role of eating patterns as important driver for building sustainable agricultural and food systems has been often neglected by research and policy [3].

There is growing evidence of the diets cost for the environment, society and public health nutrition. The sustainability of current dietary patterns has emerged in

the last years as a public health nutrition challenge [4,5] as well as within the international debate on sustainability and food security and nutrition [6,7,8,9,10].

This international debate has also emerged in the Mediterranean area where one of the most important challenges, especially faced by southern and eastern Mediterranean countries, is still food and nutrition security [11,12,13].

Food consumption and dietary patterns are considered among the most important drivers of environmental pressures. In fact, a growing body of research is showing that the achievement of substantial reductions in food-related GHG emissions to mitigate climate change must be addressed, not only by how we produce and distribute our food but also by what we eat [14,15].

The Mediterranean Diet (MD) is the dynamic heritage of millennia of exchanges in the Mediterranean basin

region that have generally defined and characterized the different local eating habits of the countries in the region.

The MD is a general cultural, historical, social, territorial and environmental heritage model that has been locally transmitted from generation to generation for centuries, and is intimately linked to the lifestyles of the Mediterranean peoples throughout their history. It is an expression of sociability and communication between villages and individuals, a way to reinforce individuals' identities in their places of origin, an integrative element of communities with nature and history, a defence mechanism of agriculture and sustainable rural development and the landscape and environment.

Besides, through its social and cultural functions as well as its significance, it embodies landscapes, natural resources and associated occupations as well as the fields of health, welfare, creativity, intercultural dialogue and, at the same time, values such as hospitality or conviviality, sustainability or biodiversity [16]. For all these reasons, the MD was inscribed in 2010 on the UNESCO's Representative List of Intangible Cultural Heritage of Humanity as *"a set of skills, knowledge, practices and traditions ranging from the landscape to the table, including crops, harvesting, fishing, conservation, processing, preparation and, particularly, consumption of food [...]". This unique lifestyle determined by the Mediterranean climate and space, is also shown through the associated festivities and celebrations*". In this sense, the MD is a complex web of cultural aspects that depend on each other [17], and it must always be considered as a part of a significant social and cultural interdependent Mediterranean food system and never as an independent item [18].

MD includes concepts of seasonality, fresh and locally grown products, culinary activities, biodiversity, heritage, traditional local and eco-friendly products, of variety of colors for fruits and vegetables were introduced together with main meal, conviviality and physical activity [19]. In the MD also physical activity has a very important role. In fact, physical activity as well as conviviality, seasonality and local products are the main recommendation of the MD Pyramid [20], a useful tool to understand and identify immediately what are the foods to be eaten in larger quantities and which ones to be consumed in moderation in line with the MD.

Apulia region (south-eastern Italy) is rich in traditions, culture and history related to traditional foods, recipes and consumption patterns that perfectly match the MD.

The present review paper aims to highlight the main socio-cultural and economic factors that have determined the erosion of the MD and the major concerns arising from the decline of the adherence to this dietary pattern in Apulia region, which is considered in this article as a case study that is representative of other Mediterranean territories. The paper provides also a brief overview of the main benefits of the Mediterranean diets as well as major dynamics determining the ongoing erosion of this dietary pattern and cultural heritage in the Mediterranean area.

2. Benefits of the Mediterranean Diet

Food plays a crucial role for prevention and promotion of health. The MD has been widely scientifically reported

to be a model of healthy eating and is a recommended plant-based dietary pattern [20]. A greater adherence to this diet has been associated with significant nutrition and health benefits [21,22]. In fact, numerous studies confirmed that good adherence to the MD is systematically associated with a markedly reduced risk for cardiovascular events and mortality [23,24,25].

Relevant studies and some clinical or community trials have exponentially been increasing the level and the quality of the evidence around the MD in the last decades in which its role in the primary prevention of cardiovascular diseases (CVD) have finally been firmly demonstrated [25]. Moreover, the MD has been associated in the PREDIMED study to a lower incidence of type II diabetes [26].

Other surveys have repeatedly shown that adherence to a MD pattern is associated with a reduced body weight [27,28], a reduced waist circumference as a marker of central obesity [28], and a lower incidence of the metabolic syndrome [29].

Moreover, data from different case-control studies showed that high intakes of foods typical of the traditional Mediterranean dietary pattern (e.g. fruit, vegetables, olive oil, fish) were associated with a reduced risk of developing various types of cancers [30,31].

The MD, apart from its well scientifically described traditional benefits (reducing cardiovascular diseases, diabetes, cancer, etc.), has other numerous health benefits that are currently fields of research such as immunity, allergic diseases, mental disorders such as depression or even quality of life (well-being).

In the last decade, the MD and its sustainability have become the object of increasing studies. In particular, on its lower environmental impact as a mainly plant-based dietary pattern, with a lower water footprint and lower greenhouse gas emissions compared with the current Western dietary pattern [32,33,34,35,36]. The Mediterranean dietary pattern is presented as a sustainable model for the Mediterranean area [17], whose adherence in Mediterranean countries would have significant contribution to a greater sustainability of the food production and consumption as well as benefits on public health.

3. Erosion of the Mediterranean Diet

Despite its increasing popularity worldwide, adherence to the MD model is decreasing in Mediterranean area due to multifactorial influences. These changes threaten seriously the transmission and preservation of the MD heritage to present and future generations. With rising income and urbanisation dietary patterns, with pronounced regional and cultural differences, are shifting towards consumption patterns higher in animal products, which require more energy, water and land resources [37,38]. There is a growing body of evidence of the non-sustainability of current dietary trends [3,39], and this is true also for Mediterranean countries. In fact, the Mediterranean area could be described as passing through a "nutritional transition" in which problems of under-nutrition coexist with overweight, obesity and food-related chronic diseases [40]. Different factors such as globalization, population growth, urbanization and socio-economic ones are changing diets and consumption

patterns in the Mediterranean region [17,41]. Food chain modernization has increased productivity and resulted in a substantial transformation of citizens' lifestyles as consequence of rising incomes, urbanization and changes in agricultural and food sectors [42].

Unfortunately, current diets in Mediterranean countries are departing from the traditional MD insofar as the quantities and proportions of the food groups are concerned. This is due to the widespread dissemination of *Western-type culture*, along with the globalization of food production and consumption, which is related to the very complex process of homogenization of food behaviour in the modern era [43].

Investigations in the early 90's showed that dietary patterns throughout the Mediterranean countries were increasingly moving away from those of the 60's [44,45]. In fact, already in 1995, the MD was considered to be at risk of becoming an "endangered species" [21]. Recent data have confirmed that the loss of adherence to the MD is continuing and increasing in many Mediterranean countries [43,46]. In this decline, there are two major concerns: an increase in the consumption of lipids (*e.g.* meat, dairy products, etc.) and a decrease in the consumption of complex carbohydrates (*e.g.* cereals and legumes) [22].

Such a decline in the adherence to the Mediterranean healthy dietary pattern was already predicted in 2005 in the Mediterranean Strategy for Sustainable Development report, issued by the United Nations Environment Programme (UNEP), as follows: "*Mediterranean agricultural and rural models, which are at the origins of Mediterranean identity, are under increasing threat from the predominance of imported consumption patterns. This trend is illustrated in particular by the decline of the Mediterranean dietary model despite the recognized positive effects on health*" [47]. The abandonment of the healthy Mediterranean diet pattern threatens this intangible heritage as well as the sustainability of Mediterranean food systems [48].

From a nutritional perspective, people from Mediterranean countries are changing their food habits and are including low nutrient dense foods (such as sugared soft drinks, sweets, bakery products, salted snacks) or vary their food processing methods towards a less healthy diet. These changes may have contributed to an increased risk of deficient intakes for some vitamins, especially folates, vitamins A and D, as well as inadequate intakes for the rest of the vitamins, in particular among certain population groups or collectives [49,50].

Recently, the interest in sustainable diets has again been raised. In 2010, through a technical workshop, an online consultation and an international scientific symposium, organized by FAO in collaboration with Bioversity International, a common scientific position was reached on the definition of "sustainable diets": "*Sustainable diets are those diets with low environmental impacts which contribute to food and nutrition security and to healthy life for present and future generations. Sustainable diets are protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible, economically fair and affordable; nutritionally adequate, safe and healthy; while optimizing natural and human resources*" [51].

In this scenario, the MD has been studied by FAO and CIHEAM as a sustainable diet model in the context of sustainable food systems in the Mediterranean area [52,53,54]. In the final declaration of the CIHEAM meeting of the Ministers of Agriculture - held in Malta in 2012 - the role of the MD was underlined "*...as a driver of sustainable food systems within the strategies of regional development and on that of traditional local products...*" [55].

4. Socio-Cultural Dynamics Determining the Erosion of the Mediterranean Diet in Apulia region

Food plays an essential role in the social and cultural life of the Mediterranean area. The MD is an expression of the diversity of food cultures and it is equivalent to the Mediterranean cultural food system or Mediterranean culinary system [56]. The importance of the MD as an example of sustainable diet lies not only in its specific foods and nutrients, but also in the methods used to characterize and analyse it and the philosophy of sustainability that is at its core [52].

In Apulia region there are still "traditional rural systems" extremely varied that are characterized by the presence of a variety of resources generally associated with landscape, architectural, cultural and social elements [57].

Changes in gender relations and intergenerational relations as well as the role of women in society and globalization, are having main effects both on Mediterranean lifestyles and on the westernization of food consumption patterns. These changes are influenced by different factors such as urbanization, organization of working time, growing participation of women in economic life, fewer household members, fewer generations living together, etc. [41].

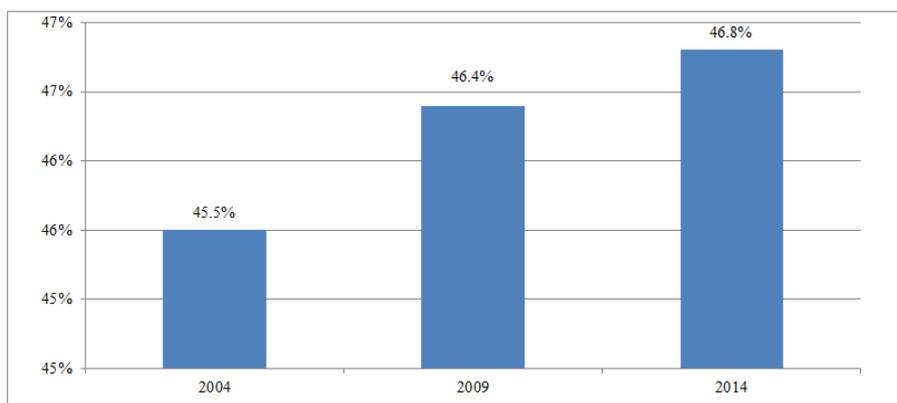


Figure 1. Female employment rates - age 15-64, 2004-2014 in Italy (%) (Source: Eurostat [58])

The role of the woman in society is an aspect of paramount importance in societal changes and in the transmission of food-related culture. The integration of women into the labour market modified considerably dietary behaviour [54]. In fact today women are a fundamental part of the workforce and this phenomenon has been raised since 70's and it is still increasing [58] (Figure 1).

The growing presence of women in paid work outside the home modified the productive and social structure originating diverse changes. In fact, the time to shop and prepare food is less and this increases the demand for easy consumption products that contain more sugars, salt and fat with a consequent reduction of the consumption of fresh products, fruit, vegetables, potatoes and other root vegetables. Working hours also make it difficult for family members to eat together and increase food consumption outside the home. All these aspects result in an impoverished diet [59]. Nowadays young people consume food outside the family, in places where food is industrialized and that rarely reflects Mediterranean traditions.

For all these factors, MD pattern in Apulia region is presently in decline among consumers because of loss of awareness and appreciation, particularly among younger generations about their own cultural food heritage. Thus, social and cultural changes have direct implication on consumers' lifestyle and health. In fact, the change in lifestyle, technology, desk jobs, has led to a more sedentary lifestyle with the related risks on health.

Concerning the eating habits, a study conducted in Apulia region in the years 2005-2006 [60] shows that the population of this region consumes mostly vegetal-based foods. In terms of average daily consumption (in grams), the share of "cereal and bakery products", "fruit" and "vegetables" is 34%, plus the "vegetable oils and fats" (2%, of which 91% consists of olive oil). Even if some trends might indicate consumers' behaviors close to the recommendations, such as increased weekly consumption of white meat, there are also indicators of eating behaviors less positive, as an increase in salty snacks and a decrease in weekly consumption of legumes. The overall profile shows the importance of the regional agri-food products, which are congruent with a Mediterranean-style food.

Obesity is currently the most widespread disease of malnutrition in the modern world and its spread is related to changing eating habits and lifestyles. In fact, in the Apulian population appears a progressive increase in the prevalence of overweight and obesity higher than the national average. In fact, World Health Organization [61] data show a progressive increase in the prevalence of overweight and obesity since 1994 in the Apulian adult population. By analyzing the data related to the investigation in 2012, it is possible to observe that about 39% and 13% of the population aged between 18 and 65 years, respectively, appears to be overweight and obese [61]. These data are moderately higher than the national average. As for children and adolescents (aged 6-17 years) data showed a prevalence of individuals with excess body weight of 28% with a slight decrease in 2012 compared to 2010 [61]. Survey data from *OKkio alla Salute* [62] on the school-age children (aged 8-9 years of both sexes) showed that 41.6% have excess body weight: 25% are overweight, about 12% are obese, while 4% have severe obesity. It

highlights an increase of more than 2% with respect to 2008 (39%) and 2010 (39.2%).

Data from 2010 of *Health Behaviour in School Aged Children* [63] study, relative to adolescents aged between 11 and 15 years, showed that 17% of children are overweight and 3.2% are obese, with a decrease in prevalence with increasing age, especially in girls. These data show a progressive abandonment of healthy Mediterranean eating habits, with consequent threats on MD.

Currently physical inactivity is the fourth most common risk factor associated with mortality in the adult population. According to the latest data of WHO in Western countries, only 25% of adults are physically active according to the minimum levels recommended. The WHO recommends, for the adult age group (18-64 years), a minimum of 150 minutes per week of moderate-intensity aerobic physical activity or at least 75 minutes a week of vigorous aerobic exercise or a combination of the two. In Italy, data show that 39.2% of the population is sedentary or not doing any sport or physical activity. In Apulia more than half of the adult population says they do not do physical activity, higher than the national average [61]. In the study PASSI [64] the proportion of people claiming to be sedentary was 38.3% in 2011, an increase compared to 2008.

Regarding 8-9 years children, the *Okkio alla salute* survey [62] results in 2012 showed a trend of values that worsens from north to south. In Apulia, only 10.9% has an hour of physical activity a day for 5-7 days a week, about 4 out of 10 children (36.9%) for two days a week and 16.4% do not exercise for at least an hour a day. The *Health Behavior in School-Aged Children* (HBSC) study in 2010 related to adolescents aged between 11 and 15 years showed that the percentage of children engaged in physical activity for at least an hour a day every day is low: less than 10% in girls and it decreases with age. On the other hand, the percentage of boys who have sedentary lifestyle is high and increases with age [63].

In Apulia region, since 1990 is observed a gradual increase in mortality for all diseases examined. Data related to 2012 are, however, in agreement with the national average except for the mortality rate for diabetes mellitus which is greater. For this disease morbidity is also higher than the national average [61]. In this scenario, the new lifestyle and consequently the decrease of physical activity represents a progressive abandonment of the Mediterranean dietary model.

5. Economic Dynamics related to MD Erosion in Apulian Context

Economy is widely recognized as one of the three pillars of sustainability and economic objectives for sustainable food chains may include ensuring moderate food prices, achieving an equality point between food supply and demand, maintaining job posts, and optimizing added value and return on investment [65].

Nowadays economic globalisation is introducing changes in the distribution and availability of food products (imports, commercial innovation, transformation of retail sales) while changes in lifestyles and food habits are simultaneously being introduced as a result of this

transition from tradition to modernity. New forms of distribution and sales are increasing the availability of determined food products leading to a loss of the Mediterranean food structure in northern countries and notable food imbalances in southern countries [66]. This impact entails loss in knowledge and practices that have contributed historically to the identity of the Mediterranean peoples and have configured a rich and complex food universe in the Mediterranean area [67]. Ancient vineyards, orchards and olive groves have been ripped out to make way for large-scale fruit or olive plantations and mixed rotational farming has been replaced by intensive monocultures. This has not only caused the loss of wildlife-rich habitats but has also had a major socio-economic impact on large parts of the region as many small-scale farmers have been forced to abandon their land to go and search for jobs elsewhere [68].

Price volatility has a strong impact on poor and on food importing Mediterranean countries. It also risks modifying diets, especially of the poorest, as they tend to shift from the Mediterranean food pattern to cheaper and less preferred, and often poorer quality foods. The economic constraints that Mediterranean territories, including Apulia region, are facing seem to have paradoxically increased overweight and obesity. This is due to the reduced access to a balanced diet, the loss of traditional diets and/or lower access to physical activity. This erosion can also result from economic threats. Moreover, the crisis of 2008/2009 caused a drop in disposable income and the consequent contraction in food purchases. In fact, the crisis affects differently the different family types and different areas of Italy. In 2008, gross domestic product (GDP) of the major industrial countries fell by 3.7% while international trade fell by 9.0%. The reduction in disposable income has been in many countries higher than the GDP, due to the increase of taxation and the reduction of public transfers, resulting in a sharp drop in consumption [69]. In Italy, the real GDP fell in 2009 by 5.2% compared with a year earlier. Disposable income and consumption fell respectively by 4.1% and 2.0%. Measured at constant prices, the total expenditure of households has declined between 2007 and 2009 by 2.6% compared to prices that, instead, remained constant [70].

The crisis had consequences on food consumption. In fact, in 2009, the average share of food products purchases compared to the total households' expenditure was 0.2 percent lower than two years earlier [69]. This could have direct consequences on the agricultural sector. In fact, this sector plays a key role in the economy of Apulia region where are employed around 110,000 workers (9.2% of total agricultural workforce at Italian level), of which 41% are women. The agricultural sector contributes to regional GDP slightly less than 5% (value higher than that recorded at the national level) [71]. It seems clear that the most important economic resource in Apulia is agriculture, favoured by the Mediterranean climate and the large areas of the plains. Olive oil and wine are an economic opportunity for the region, but are also a way to preserve both the agricultural vocation of Apulia region and the landscape and environmental features of the area as essential elements of MD [71].

The vibrant Apulian economy linked to agricultural production of typical agri-food products, is an opportunity to preserve these productions and all the traditions and *savoir-faire*, strictly connected. Nevertheless, there are some economic factors that affect the increasing erosion of the MD as income inequality, trend of food consumption and the role of large-scale retail.

Regarding the first point, it is important to stress two main phenomena: the existence in Italy of strong levels of income inequality; and the existence of a link between eating habits and income levels. Income strongly affects the willingness to pay and consumer's purchasing choices. The existing income differences in different areas of the country and the poverty rate, especially in the south, make price a crucial factor in the food-product purchase decision process. In fact, according to the survey carried out by Istat [72] on household consumption in Italy, 2.6 million households are poor (11.1 percent of the total of resident households), corresponding to 7.6 million individuals (about 13.13 percent of total population). Southern regions account for up to 70 percent of the Italian poor families [73]. In Italy, income difference is one of the elements that characterize the economic gap between the North and the South. At lower levels of income correspond higher shares of foodstuffs spending.

Table 1. Average monthly household expenditure on food and beverages in Italy, 2011-2013

	North			Central Italy			South			Italy		
	2011	2012*	2013*	2011	2012*	2013*	2011	2012*	2013*	2011	2012*	2013*
Total average monthly household expenditure (€)*	2843	2761	2694	2577	2511	2436	1894	1844	1798	2488	2419	2359
Total average monthly household expenditure on food and beverages (€)*	473	463	458	474	484	477	485	467	455	477	468	461
Bread & Cereals (%)**	2.8	2.8	2.9	3.1	3.1	3.2	4.3	4.1	4.1	3.2	3.2	3.2
Meat (%)**	4.0	3.8	3.8	4.3	4.7	4.7	5.9	6.1	6.0	4.6	4.6	4.5
Fish (%)**	1.2	1.3	1.3	1.7	1.8	1.8	2.7	2.6	2.7	1.7	1.7	1.7
Dairy products & Eggs (%)**	2.4	2.3	2.3	2.5	2.5	2.5	3.4	3.3	3.3	2.6	2.6	2.6
Oils & Fats (%)**	0.5	0.6	0.6	0.6	0.6	0.6	0.9	0.9	0.8	0.6	0.7	0.7
Potatoes, Fruit & Vegetables (%)**	2.9	3.0	3.2	3.4	3.5	3.6	4.5	4.4	4.4	3.4	3.5	3.6
Sugar, coffee & other (%)**	1.2	1.2	1.3	1.2	1.3	1.4	1.9	1.8	1.9	1.4	1.4	1.4
Beverages %**	1.7	1.7	1.7	1.5	1.7	1.8	2.0	2.1	2.0	1.7	1.8	1.8

Source: Istat [74].

*Current prices taking into consideration inflation.

**Values represent percentages of total average monthly household expenditure on food and beverages.

A survey of Istat, referring to 2013, shows that 65 percent of Italian households, under inflation pressure, purchases inferior quantity and/or quality products; a

higher percentage than the previous year (62.3% in 2012) [74]. This shows how a strong inflationary pressure influence the attitude of consumers in purchasing food

products which may lean toward lower-quality products. Consumption choices of food are mainly guided by two factors: the quality and the price. Consequently, households with lower income level risk orienting their choices towards cheaper products, out of season, of lower quality and often from other countries, with direct consequences on the sustainability of typical regional seasonal products, which fully respect the MD. This is confirmed by the *trend of food consumption* (Table 1). It is observed that in Italy there is a decrease in average monthly household expenditure on food products. The monthly average household expenditure in 2013, amounting to 2,359 euros, decreased by 2.5% with respect to 2012 [74].

Household food expenditure has slightly decreased. In fact, it was 468 euros in 2012 and 461 in 2013, despite a significant decrease in meat expenditure (-3.2%) and the implementation of cost containment strategies [74].

The largest share of food expenditure (106 euros, equal to 23%) is still dedicated to the purchase of meat. Spending on potatoes, fruit and vegetables is, on average, of 85 euros monthly, and for bread and cereals of 75.5 euros. The smallest household expense is on oils and fats (16.5 euros). Beverages account for 9.2% of food expenditure that households spend mainly for wine and mineral water (Figure 2). According to the Istat survey [74] a slight decrease in food expenditure, compared with a greater decrease in the non-food one, determined the increase of the share of food and beverages expenditure in total household expenditure (from 19.4% in 2012 to 19.5% in 2013). The most significant rise occurred in the central Italy regions (from 19.3% to 19.6%), but in the South of the country it is observed the highest value (25.3%) [74] (Figure 3).

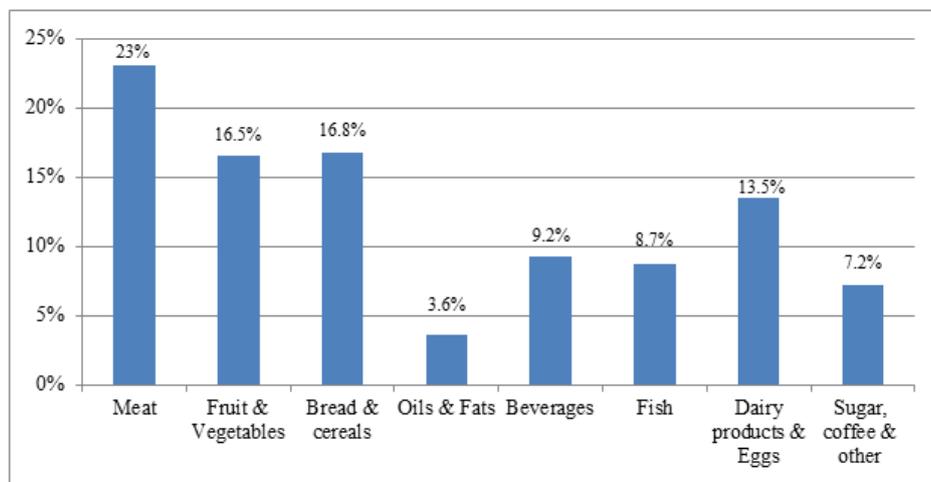


Figure 2. Breakdown of household expenditure on food and beverages in 2013 at Italian level (Source: Istat [74])



Figure 3. Share of monthly household food expenditure in total expenditure in different Italian geographical areas, 2011-2013 (Source: Istat [74])

Nationwide monthly household spending on food and beverages amounted to an average of 461 euros (19.5% of total expenditure). Apulia region had, in 2013, a monthly household food expenditure (24.4%) a bit lower than the south average (25.3), but still high compared to the average values of north and central Italy [74].

Another important element in shifting from the Mediterranean food pattern is represented by the role of *large-scale retail*. In Italy, the share of retail in food distribution market is still below the European average values but it is experiencing a significant growth. Thus, the share of food sales attributable to the traditional

market channels has been greatly reduced, while the market share of supermarkets and hypermarkets have increased, mainly driven by sales in hypermarkets, whose values have doubled between 1996 and 2005 [73].

In fact, also the proportion of household expenditure made in supermarkets and hypermarkets has increased significantly, rising from 59 percent in 2001 to 64 percent in 2005. Moreover, in the northern part of the country, the role of large-scale distribution is more important (with 66 percent of food sales), while it only reaches 30 percent in the South, where traditional shops and street vendors are still holding 70 percent of food sales [75].

In the south of the country, this assumes a great importance because of the degree of confidence that the consumer has with the seller, and there is also an informal purchasing relationship that reflects social and cultural relations intrinsic to the territory with the purchasing of a local product, fresh and seasonal. Instead, for the large-scale distribution, it is important to ensure food products with high quality value all year round and this requires retailers to establish contractual agreements with suppliers [73]. Moreover, the large-scale retail places on the local market food products from different areas of the planet, offering, as mentioned above, products throughout the year and often at lower prices, according to the labor costs in the country of origin of such products. This affects the choices of consumers. The price is, in fact, often a discriminant for the purchase of a product instead of another one. This affects the traditional local production systems, knowledge and know-how directly linked to the production process.

6. Conclusions

A broader adherence to the MD model would make a significant contribution to greater sustainability of Mediterranean food production and consumption, in addition to the well-known benefits for the public health of the Mediterranean people. The abandonment of the healthy MD pattern and the emergence of new lifestyles associated with socioeconomic and cultural changes pose important threats for this intangible heritage as well as for the sustainability of Mediterranean food systems.

Apulia region gives important value to the traditions related to food, conviviality at the table and to the typicality of the products, but nowadays this feature is threatened. In fact, the reduction of food expenditure related to the reduction of household income, and the increase in outdoor meals, is bringing more and more consumers to choose products of inferior quality, out of season and coming from areas of the world where labor is less expensive. The repercussions on the local agricultural economy are obvious, and in Apulia region, where agricultural GDP is still relevant, is of paramount importance to make consumers aware and conscious about the local origin of a product.

The on-going erosion process of the MD is nowadays a scientific evidence. All the socio-cultural and economic factors cited above contribute to the progressive erosion of the system. However, in recent years has been arising the interest towards healthier and quality products. The recognition of local, typical and traditional products is crucial to keep alive these products and to bring the consumer in touch with his roots and traditions that are part of the regional culture. The economic importance of regional typical products (e.g. olive oil, wine, etc.) is definitely a way to encourage production and commitment to ensure quality.

Enhancing the transition towards more sustainable food systems in the Mediterranean area requires a development of holistic approaches within different spheres and arenas of agriculture, economy, culture and lifestyle, environment, nutrition and health. This is crucial for designing cross-sectoral policy instruments allowing the improvement of the sustainability of the diets and food systems. Thus,

governments (national, regional) need to commit themselves to undertake appropriate actions aiming to promote sustainable food production and consumption. Efforts should primarily be oriented in recognition of typical regional products, which are in perfect accord with the MD, with creation and recognition of quality brands, dissemination activities, festivals and events not only at local level, but also at regional and national one.

References

- [1] Kearney J., "Food consumption trends and drivers". *Phil. Trans. R. Soc.*, 365: 2793-2807, 2010.
- [2] Reisch L., Eberle U., Lorek S., "Sustainable food consumption: an overview of contemporary issues and policies". *Sust Sci Pract & Policy*; 9(2); 7-25, 2013.
- [3] Guyomard H., Darcy-Vrillon B., Esnouf C., Marin M., Momot A., Russel M., Guillou M., *Eating patterns and food systems: critical knowledge requirements for policy design and implementation*. INRA, 2011. Document prepared for the Commission on Sustainable Agriculture and Climate Change. Available: https://ccafs.cgiar.org/sites/default/files/assets/docs/guyomard_et_al_eating_patterns_and_food_systems.pdf.
- [4] Buttriss J. and Riley H., "Sustainable diets: Harnessing the nutrition agenda". *Food Chemistry*; 140: 402-407, 2013.
- [5] Clonan A. and Holdsworth M., "The challenge of eating a healthy and sustainable diet". *Am J Clin Nutr*; 96(3):459-460, 2012.
- [6] Berry EM., Dernini S., Burlingame B., Meybeck A., Conforti P., "Food security and sustainability: can one exist without the other?" *Public Health Nutrition*, 18(13):2293-302, 2015.
- [7] HLPE, *Food losses and waste in the context of sustainable food systems*. A report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security, Rome, 2014.
- [8] FAO, *The State of Food and Agriculture. Food systems for better nutrition*. FAO, Rome, 2013.
- [9] FAO, *Food Security and Nutrition in the Southern and Eastern Rim of the Mediterranean Basin*. FAO, Cairo, 2013.
- [10] Garnett T., "Food sustainability: problems, perspectives and solutions". *Proceedings of the Nutrition Society*; 72:29-39, 2013.
- [11] FAO, *Greening the economy with agriculture*. Working paper 4: utilization. Improving food systems for sustainable diets in a green economy. FAO, Rome, 2012. Available: www.fao.org/docrep/015/i2745e/i2745e00.pdf.
- [12] FAO (2012b). *Towards the future we want. End hunger and make the transition to sustainable agricultural and food systems*. FAO, Rome, 2012. Available: <http://www.fao.org/docrep/015/an894e/an894e00.pdf>.
- [13] CIHEAM, *10th meeting of the Ministers of Agriculture of CIHEAM's Member Countries: Final declaration*. February 6, 2014, Algiers (Algeria). Available: <http://ciheam.org/images/CIHEAM/PDFs/Cooperation/10mmc%20-%20ciheam%20algiers%20-%20final%20declaration.pdf>.
- [14] Marlow JH., Hayes WK., Soret S., Carter R., Schwab E., Sabate J., "Diet and the environment: does what you eat matter?" *Am J Clin Nutr*; 89(suppl): 1699s-703s, 2009.
- [15] Macdiarmid JJ., Kyle J., Horgan GW., Loe J., Fyfe C., Johnstone A., McNeil G., "Sustainable diets for the future: can we contribute to reducing greenhouse gas emissions by eating a healthy diet?" *Am J Clin Nutr*; 96(3):632-9, 2012.
- [16] Dernini S., "The erosion and the Renaissance of the Mediterranean Diet: A sustainable cultural resource". *Quaderns de la Mediterrània*; 16:75-82, 2011.
- [17] Medina F.X., "Food consumption and civil society: Mediterranean diet as a sustainable resource for the Mediterranean area". *Public Health Nutr*; 14(12A): 2346-2349, 2011.
- [18] Medina F.X., Assessing sustainable diets in the context of sustainable food systems – socio-cultural dimensions. In, *Assessing diets within the sustainability of food systems*, Proceedings of an international FAO/CRA/FQH workshop. A. Meybeck, S. Redfern, F. Paoletti, C. Strassner, eds. FAO, Rome, 2015. 163-166.
- [19] Lacirignola C., Dernini S., Capone R., Meybeck A., Burlingame B., Gitz V., El Bilali H., Debs Ph., Belsanti V., *Towards the*

- development of guidelines for improving the sustainability of diets and food consumption patterns: the Mediterranean Diet as a pilot study. CIHEAM/FAO – Options Méditerranéennes, Series B: Studies and Research, N° 70; Bari, 2012. 67 p. Available: [http://om.ciheam.org/om/pdf/b70\(en\)/b70\(en\).pdf](http://om.ciheam.org/om/pdf/b70(en)/b70(en).pdf).
- [20] Bach-Faig A., Berry E.M., Lairon D., Reguant J., Trichopoulou A., Dernini S., Medina F.X., Battino M., Miranda G., Serra-Majem L., “Mediterranean Diet Pyramid Today”. *Science and Cultural Updates. Public Health Nutrition*; 14(12A): 2274-2284, 2011.
- [21] Nestle M., “Mediterranean diets: historical and research overview”. *American Journal Clinical Nutrition*; 61(suppl.):1313S-20S, 1995
- [22] Maillot M., Issa C., Vieux F., Lairon D., Darmon N., “The shortest way to reach nutritional goals is to adopt Mediterranean food choices. Evidence from computer-generated personalized diets”. *Am J Clin Nutr*; 94(4):1127-37, 2011.
- [23] Trichopoulou A., Bamia C., Trichopoulos D., “Mediterranean diet and survival among patients with coronary heart disease in Greece”. *Arch Intern Med*; 25; 165(8):929-35, 2005.
- [24] Trichopoulou A., Bamia C., Trichopoulos D., “Anatomy of health effects of Mediterranean diet: Greek EPIC prospective cohort study”. *BMJ*; 338: 2337, 2009.
- [25] Estruch R., Ros E., Salas-Salvadó J., Covas M.-I., Corella D., Arós F., Gómez-Gracia E., Ruiz-Gutiérrez V., Fiol M., Lapetra J., Lamuela-Raventós R. M., Serra-Majem L., Pintó X., Basora J., Angel Muñoz M., Sorlí J. V., Alfredo Martínez J., and Martínez-González M. A., “Primary Prevention of Cardiovascular Disease with a Mediterranean Diet”. *N Engl J Med*, 368/14:1279-1290, 2103.
- [26] Salas-Salvadó J., Bulló, M., Babio N., Martínez-González M.Á., Ibarrola-Jurado N., Basora J., Estruch R., Covas M.I., Corella D., Arós F., Ruiz-Gutiérrez V., Ros E., PREDIMED Study Investigators., “Reduction in the incidence of type 2 diabetes with the Mediterranean diet: results of the PREDIMED-Reus nutrition intervention randomized trial”. *Diabetes Care*; 34: 14-19, 2011.
- [27] Mendez MA., Popkin BM., Jakszyn P., Berenguer A., Tormo MJ., Sanchez MJ., Quiros JR., Pera G., Navarro C., Martinez C., Larranaga N., Dorronsoro M., Chirlaque MD., Barricarte A., Ardanaz E., Amiano P., Agudo A., Gonzalez CA., “Adherence to a Mediterranean Diet is Associated with Reduced 3-year Incidence of Obesity”. *Journal of Nutrition*; 136:2934-2938, 2006.
- [28] Panagiotakos DB., Chrysohoou C., Pitsavos C., Stefanadis C., “Association between the Prevalence of Obesity and Adherence to the Mediterranean Diet: the ATTICA Study”. *Nutrition*; 22:449-456, 2006.
- [29] Tortosa A., Bes-Rastrollo M., Sanchez-Villegas A., Basterra-Gortari F.J., Nunez-Cordoba J.M., Martinez-Gonzalez M.A. “Mediterranean diet inversely associated with the incidence of metabolic syndrome: the SUN prospective cohort”. *Diabetes Care*; 30(11):2957-2959, 2007.
- [30] La Vecchia C., “Mediterranean diet and cancer”. *Public Health Nutr*, 7(7):965-968, 2004
- [31] Vernele L., Bach-Faig A., Buckland G. and Serra-Majem L., “Association between the Mediterranean diet and cancer risk: a review of observational studies”. *Nutr Cancer*, 62(7): 860-870, 2010.
- [32] Tukker A., Goldbohm R.A., De Koning A., Verheijden M., Kleijn R., Wolf O., Pérez-Domínguez I., Rueda-Cantuche JM., “Environmental impacts of changes to healthier diets in Europe”. *Ecological Economics*; 70: 1776-1788, 2011.
- [33] Capone R., Lamaddalena N., Lamberti L., Elferchichi A., El Bilali H., “Food consumption patterns and sustainable natural resources management in the Mediterranean region”. *Journal of Food Science and Engineering*; 2(8): 437-451, 2012.
- [34] Capone R., Iannetta M., El Bilali H., Colonna N., Debs P., Dernini S., Maiani G., Intorre F., Polito A., Turrini A., Cardone G., Lorusso F., Belsanti V., “A preliminary assessment of the environmental sustainability of the current Italian dietary pattern: water footprint related to food consumption”. *Journal of Food and Nutrition Research*, 1/4, 59-67, 2013. Available online at: <http://pubs.sciepub.com/jfnr/1/4/5/jfnr-1-4-5.pdf>.
- [35] Capone R., Debs P., El Bilali H., Cardone G., Lamaddalena N., “Water Footprint in the Mediterranean food chain: implications of food consumption patterns and food wastage”. *International Journal of Nutrition and Food Sciences*; 3(2): 26-36, 2014.
- [36] Capone R., El Bilali H., Debs P., Cardone G., Driouech N., “Food system sustainability and food security: connecting the dots”. *Journal of Food Security*; 2(1): 13-22, 2014a.
- [37] Gerbens-Leenes W. and Nonhebel S., “Food and land use. The influence of consumption patterns on the use of agricultural resources”. *Appetite*; 45:24-31, 2005.
- [38] Lundqvist J., de Fraiture C. and Molden D., *Saving Water: From Field to Fork – Curbing Losses and Wastage in the Food Chain*. SIWI Policy Brief, Stockholm International Water Institute (SIWI), Stockholm, 2008.
- [39] Tukker A., Bausch-Goldbohm S., Verheijden M., de Koning A., Kleijn R., Wolf O., Pérez Domínguez I., *Environmental impacts of diet changes in the EU*. Technical Report, European Commission (EC), Joint Research Centre (DG JRC). Institute for Prospective Technological Studies, 2009. Available: <http://ftp.jrc.es/EURdoc/JRC50544.pdf>.
- [40] Belahsen R., “Cultural diversity of sustainable diets. Nutrition transition and food sustainability”. *Proc Nutr Soc*; 73: 385-388, 2014.
- [41] Padilla M., Ensuring Food Security and Food Safety. In CIHEAM (ed.), *Mediterra 2008. The Future of Agriculture and Food in Mediterranean Countries*, Paris, 2008, Presses de Sciences Po-CIHEAM. 228-245.
- [42] Gil M.J., “Mediterranean diet and health”. *New Medit*, 1/2009, 2-3, 2009.
- [43] Da Silva R., Bach-Faig A., Raido Quintana B., Buckland G., Vaz de Almeida MD., Serra-Majem L., “World variation of adherence to the Mediterranean diet, in 1961-1965 and 2000-2003”. *Public Health Nutr*; 12(9A):1676-84, 2009.
- [44] Ferro-Luzzi A., Branca F., “Mediterranean diet, Italian-style: prototype of a healthy diet”. *Am J Clin Nutr* 61(Suppl): 1338S-45S, 1995.
- [45] Alberti-Fidanza A., Fidanza F., Chiuchiu M., Verducci G., Fruttini D., “Dietary studies on two rural Italian population groups of the Seven Countries Study. 3. Trend of food and nutrient intake from 1960 to 1991”. *Eur J Clin Nutr*. 53:854-60, 1999.
- [46] Garcia-Closas R., Berenguer A., Gonzalez C., “Changes in food supply in Mediterranean countries from 1961 to 2001”. *Public Health Nutr* 9(1):53-60, 2006
- [47] UNEP/MAP, *Mediterranean Strategy For Sustainable Development: A Framework for Environmental Sustainability and Shared Prosperity*. Tenth Meeting of the Mediterranean Commission on Sustainable Development (MCSDD), Athens, 2005.
- [48] Dernini S., Meybeck A., Burlingame B., Gitz V., Lacirignola C., Debs P., Capone R., El Bilali H., “Developing a methodological approach for assessing the sustainability of diets: The Mediterranean diet as a case study”. *New Medit*; 12(3): 28-36, 2013
- [49] Serra-Majem L., Ribas L., Ngo J., Aranceta J., Garaulet M., Carazo E., Mataix J., Pérez-Rodrigo C., Quemada M., Tojo R., et al. “Risk of inadequate intake of vitamins A, B1, B6, C, E, folate, iron and calcium in the Spanish population aged 4 to 18”. *Int. J. Vitam. Nutr. Res.* 2001; 71: 325-331.
- [50] Serra-Majem L., Ribas L., Pérez-Rodrigo C., García-Closas R., Peña-Quintana L., Aranceta J. “Factors associated to nutrient intake among children and adolescents: Results from the EnKid study”. *Ann. Nutr. Metab.* 2002; 46:31-38.
- [51] FAO and Bioversity, *Sustainable Diets and Biodiversity. Directions and Solutions for Policy, Research and Action*. Rome, 2012. Available: <http://www.fao.org/docrep/016/i3004e/i3004e00.htm>.
- [52] Burlingame B., Dernini S., “Sustainable Diets: The Mediterranean Diet Exemple”. *Public Health Nutrition*; 14 (12A): 2285-2287, 2011.
- [53] FAO and CIHEAM, *Towards the Development of Guidelines for Improving the Sustainability of Diets and Food Consumption Patterns in the Mediterranean Area*. Discussion Paper. FAO, Rome, 2012. Available: <http://www.fao.org/docrep/016/ap101e/ap101e.pdf>.
- [54] FAO and CIHEAM, *Mediterranean food consumption patterns: diet, environment, society, economy and health*. A White Paper of Priority 5. Expo Milan 2015 Feeding Knowledge Programme. CIHEAM-Bari/FAO, Rome 2015.
- [55] CIHEAM, *Final declaration. 9th meeting of the Ministers of Food, Agriculture and Fisheries of the Member Countries of CIHEAM*; International Centre for Advanced Mediterranean Agronomic Studies (CIHEAM), Valletta, 2012. Available: <http://www.ciheam.org>.
- [56] Medina F.X., “Mediterranean diet, culture and heritage: challenges for a new conception”. *Public Health Nutr*; 12:1618-20, 2009.

- [57] Regione Puglia, *Il contesto socioeconomico dell'agricoltura e dei territori rurali della Regione Puglia* (The socio-economic context of agriculture and rural areas of Apulia region), Assessorato alle risorse agroalimentari, 2013.
- [58] Eurostat, Statistics explained, Employment rates for selected population groups, 2004-14 (%), Italy. Available: [http://ec.europa.eu/eurostat/statistics-explained/index.php/File:Employment_rates_for_selected_population_groups_2004%E2%80%9314_\(%25\)_YB16.png#file](http://ec.europa.eu/eurostat/statistics-explained/index.php/File:Employment_rates_for_selected_population_groups_2004%E2%80%9314_(%25)_YB16.png#file).
- [59] García Álvarez-Coque and López-García Usach, *Mediterra 2012 Chapter 4 Mutations in mediterranean societies* Senén Florensa and Xavier Aragall European Institute of the Mediterranean, Spain, 2009.
- [60] Piccinelli R., Arcella D., Buonocore P., D'Addezio L., Le Donne C., Mistura L., Sette S., Turrini A., Leclercq C., *L'indagine nazionale sui consumi alimentari in Italia INRAN-SCAI 2005-06*, (National survey on food consumption in Italy INRAN-SCAI 2005-06). Parte A: I metodi (Part A: Methods). Osservatorio Consumi Alimentari, INRAN, Rome, January 2010. Available: http://www.inran.it/files/download/INRANSCAI/3_monografia_scai_parte_a1_metodi_campione_rilevatori_22_1_10.pdf.
- [61] World Health Organization, *Nutrition, Physical Activity and Obesity: Italy*, WHO, 2013. Available: http://www.euro.who.int/_data/assets/pdf_file/0018/243306/Italy-WHO-Country-Profile.pdf.
- [62] OKkio alla Salute, *Risultati dell'indagine 2008, 2010 e 2012 (Survey results in 2008, 2010 and 2012)*. Regione Puglia, Bari, 2012.
- [63] HBSC, *Health Behavior in School-Aged Children*. World Health Organization Collaborative Cross-National Survey, 2010. <http://www.euro.who.int>.
- [64] Sistema sorveglianza PASSI (2009). *Rapporto Regione Puglia e primo semestre 2009*. (Regione Puglia Report and the first semester of 2009), Regione Puglia, 2009. ISBN 88-6020-026-6. Available: http://www.sanita.puglia.it/Studio_Passi.
- [65] Adinolfi F., Capone R., El Bilali H., "Assessing diets, food supply chains and food systems sustainability: towards a common understanding of economic sustainability". In, Meybeck A., Redfern S., Paoletti F. and Strassner C. (eds); *Proceedings of International Workshop "Assessing sustainable diets within the sustainability of food systems - Mediterranean diet, organic food: new challenges"*; 15-16 September 2014, Rome. FAO, Rome. pp: 167-175. Available: <http://www.fao.org/3/a-i4806e.pdf#page=221>.
- [66] González Turmo I., The Mediterranean diet: consumption, cuisine and food habits. In *Mediterra 2012: The Mediterranean diet for sustainable regional development*. Paris: CIHEAM SciencesPo Les Presses. 115-32, 2012.
- [67] Lacirignola C. and Capone R., "Mediterranean Diet: territorial identity and food safety". *New Medit* 4/2009, 2-3, 2009.
- [68] Padilla M., Capone R., Palma G., "Sustainability of the food chain from field to plate: case of the Mediterranean diet". In *Sustainable diets and biodiversity: United against hunger*. FAO and Bioversity International, Rome; 230-241.
- [69] Pozzolo A.F., *I consumi alimentari in Italia in periodo di crisi* (Food consumption in Italy in times of crisis). In, Cersosimo D. (ed.), "I consumi alimentari: evoluzione strutturale, nuove tendenze, risposte alla crisi" (Food consumption: structural changes, new trends, responses to the crisis). Edizioni Tellus, Rome, 2011.
- [70] Romano D., *L'evoluzione strutturale dei consumi alimentari in Italia* (Structural evolution of food consumption in Italy). In Cersosimo D., *I consumi alimentari: evoluzione strutturale, nuove tendenze, risposte alla crisi* (Food consumption: structural changes, new trends, responses to the crisis). Edizioni Tellus, Rome, 2011.
- [71] Istat, *6° Censimento Agricoltura 2010* (6th Agriculture Census). Rome, 2010.
- [72] Istat, *I consumi delle famiglie* (Households expenditure). National Institute of Statistics (Istat), Rome, 2004. Available: http://www3.istat.it/dati/catalogo/20060627_00/ann_06_11_consumi_famiglie04.pdf
- [73] Peta E.A., *Consumi agro-alimentari in Italia e nuove tecnologie* (Agro-food consumption in Italy and new technologies). Italian Ministry of Economic Development, Rome, 2007. Available: http://www.dps.tesoro.it/documentazione/uval/consumi%20e%20innovazioni%20marzo_rev.pdf
- [74] Istat, *I consumi delle famiglie* (Households expenditure). National Institute of Statistics (Istat), Rome, 2014. Available: <http://www.istat.it/it/files/2014/07/Consumi-delle-famiglie1.pdf?title=Consumi+delle+famiglie++08%2Fflug%2F2014++Testo+integrale.pdf>.
- [75] Ismea, *Rapporto Annuale "Evoluzione del sistema agroalimentare italiano"* (Annual Report "Evolution of Italian agri-food system"). Volume I. Institute of services for the agricultural and food market (Ismea), Rome, 2006.