Fondazione Barilla

il tuo cibo, la tua terra

ITALY AND FOOD

NUTRITIONAL CHALLENGES, AGRICULTURE, FOOD LOSS AND WASTE

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Nutritional challenges, agriculture, food loss and waste

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Introduction

Today's food systems are facing the huge challenge of feeding a global population that is expected to reach 10 billion by 2050, while having to tackle three global paradoxes.

Nutritional challenges. No country in the world is free from major nutritional challenges. According to FAO[1], over 820 million people worldwide are suffering from hunger, while 2 billion people are affected by moderate or severe food insecurity. Furthermore, 2 billion adults in the world - two out of five - are overweight, as are 40 million children under five years. Many countries across the world are facing a twofold, and sometimes threefold, malnutrition challenge, where hunger and overweight exist side by side not only within the same nation but also within the same communities and even within the same family.

Sustainable agriculture. Food production is one of the main causes of climate change and its impact is on a scale similar to that of the energy industry. The recently released IPCC[2] Report has shown that food systems account for as much as 37% of total global greenhouse gas emissions, if we include pre-and post-agricultural production activities, such as animal feed production, transport and packaging, for example. Less than half of global agricultural production is currently being used for direct human consumption, and over 40% of the available farming land is used to produce animal feed or biofuels. Furthermore, only 55% of the calories obtained from global cereal production are destined for human consumption, while the rest are subdivided between animal feed (36%) and biofuels production. There is also a growing demand and intense competition for water resources for agricultural, household and industrial use. According to FAO data, irrigated agriculture alone accounts for over 70% of global freshwater withdrawal and can exacerbate local water scarcity. Food accounts for over 90% of our water footprint, i.e. of the water we consume daily, albeit 'invisibly'.

Food loss and waste. 1.3 billion tons of edible food are lost or wasted every year. This amounts to one third of all food produced globally and four times what it would take to feed the people suffering from hunger worldwide. The causes of this waste are linked to food production and distribution, industry and large retailers, but also to individual behaviors. According to the recently released IPCC Report, food waste accounts for 8% of total greenhouse gas emissions, i.e. 3.3 billion tons a year. According to FAO[3], the full cost of food waste amounts to USD 2.6 trillion, including USD 700 billion of environmental costs and USD 900 billion of social costs.

Faced with this situation, our Report presents a study of Italy's agri-food system with a view to promoting dialogamong the various stakeholders and reaching the Sustainable Development Goals (SDGs). A sustainable agri-food system is both the end and the means for the implementation of the 2030 Agenda, and the commitment this requires provides an opportunity to strengthen c ollaboration among policy makers, businesses, research institutions and civil society. Providing healthy, good and sufficient food to meet the nutritional, cultural and social needs of a rapidly growing and increasingly urbanized global population is one of the biggest and most important challenges of the 21st century, in the effort to promote sustainable development while respecting the Earth's natural limits.

The study has been conducted using the Food Sustainability Index (FSI), developed by the Economist Intelligence Unit (EIU) with the Barilla Foundation. The FSI measures the sustainability of the food systems of 67 countries across the world [Figure 1], focusing on three areas: food loss and waste, agriculture and nutritional challenges. Using 37 indicators and 89 individual metrics, the FSI conducts a comprehensive analysis of national food systems in order to highlight best practices and areas for improvement, also enabling comparison with other countries.

Figures 1. The 67 countries included in the third edition (2018) of the Food Sustainability Index (in blue)

NOTES

[1] FAO, 2019. State of Food Insecurity. http://www.fao.org/state-of-food-security-nutrition/en/

[2] IPCC, 2019. Climate Change and Land. https://www.ipcc.ch/report/srccl/

[3] FAO, Food Wastage Footprint. http://www.fao.org/3/a-i3991e.pdf

Executive summary

Nutritional Challenges

Italians are among the longest-living people in the world, with a life expectancy of around 83 years and a healthy life expectancy of 73 years. However, a number of factors point to a reversal of this trend. The prevalence of overweight among children and adolescents is 37%, while among adults it is as high as 59%. Less than 60% of Italians reach the recommended levels of physical activity and the analysis of eating habits shows that Italians are gradually shifting away from the Mediterranean diet. Although the prevalence of malnutrition is low, it is nevertheless a major challenge and is closely linked to poverty. Italy is the European country that deviates most significantly from the recommended levels of sodium intake, with a per capita consumption of approximately 4g/day. Although Italy does not have a national strategy on nutrition and health, it has adopted the European Food and Nutrition Action Plan 2015–2020 to monitor the population's nutritional status and implement policies that promote a healthy diet and prevent obesity. Best practices include the "Sport di Classe" (Sport Class) project, run by the Ministry of Education, Universities and Research (MIUR) in partnership with the Italian National Olympic Committee (CONI), and the "Frutta e verdura nelle scuole" (Fruit and vegetables in school) program, promoted by the European Union.

Agriculture

Italy is one of the European Union's largest agricultural producers and this production has significant impacts on the environment. Agricultural land degradation is one of the most worrying in Europe, with carbon content in the soil as a percentage of weight at only 1.1%, falling short of the 1.5% threshold below which land is considered to be at risk of desertification. Nationwide, agricultural freshwater withdrawal accounts for 6.74% of renewable water resources, but over 75% of fish stocks are overexploited or collapsed. With regard to annual greenhouse gas emissions from agriculture, 64% are due to livestock farming and 36% to crop production. Emissions amount to roughly 2.3 Gg of CO_2 eq. per hectare of farmland, which are lower than those of other major agricultural producers like France, Germany and the Netherlands, but higher than Spain's. Opportunities to invest in sustainable agriculture and mitigate climate change are limited by the absence of a nationwide government strategy in this area. Finally, young people represent only 5% of farmers, although, according to recent statistics, they are showing a renewed interest in farming as a career.

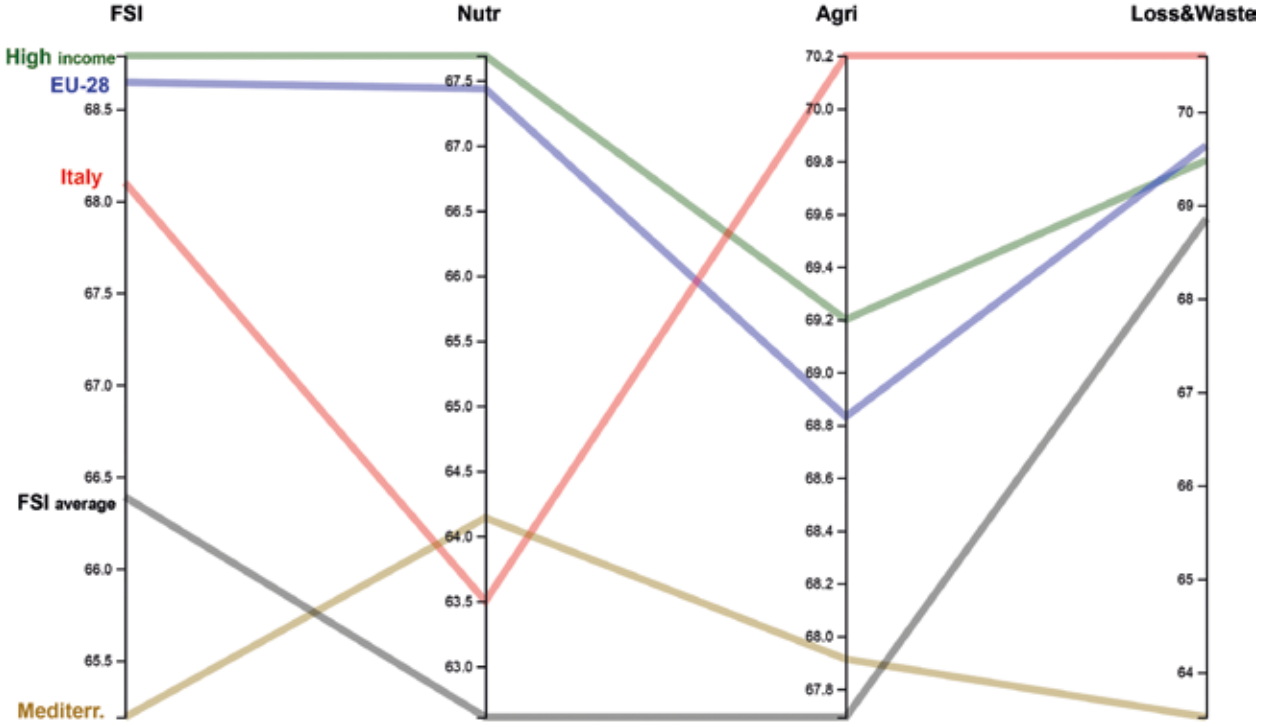
Food loss and waste

Italy generates 2.2 million tons of food waste every year, costing around EUR 8.5 billion - 0.6% of GDP. Annual per capita food waste is 65 kg, of which 27.5 kg is household food waste. Looking at food losses, Italy falls just below the European average, with 2% of food being lost from the post-harvest stage through to industrial processing, excluding the agricultural stage. Italy has strong national policies in place to combat food waste, including the National Food Waste Prevention Plan and the innovative Gadda Law, which has facilitated donations of surplus food through a highly participatory approach involving numerous players in the food supply chain. According to Banco Alimentare estimates, donations grew by 20% during the first year of its implementation. Additional measures such as setting reduction targets in keeping with the 2030 Agenda, providing financial incentives, increasing tax deductions for donating food surpluses, and reviewing waste disposal fees could contribute to further food waste reductions.

Food systems in Italy: best practices and areas for improvement

Pillar	Best practices	Areas for improvement
 Nutritional Challenges	• High life expectancy • High healthy life expectancy • Numerous initiatives to promote healthy lifestyles	• Overweight in children, adolescents and adults • Low levels of physical activity • High sodium consumption
 Agriculture	• Presence of agricultural insurance schemes • Relatively low greenhouse gas emissions	• Significant levels of virtual water trade • Low carbon content in the soil • High average age of farmers and low percentage of women in farming • Few opportunities for investing in sustainable agriculture
 Food Loss and Waste	• Innovative legislation • Positive initiatives from the Third Sector • Public-private partnerships • Scientific interest in the issue	• High levels of per capita waste • Absence of monitoring systems • Absence of a specific reduction target for food loss and waste

Food systems in Italy: the three pillars compared



The parallel plot provides an overview of the results of the Food Sustainability Index (FSI) 2018 with a focus on Italy, represented by the red line. The four vertical axes represent the overall FSI 2018 score (100 = sustainable), for the categories of Nutritional challenges (Nutr), Agriculture (Agri), and Food Loss and Waste (Loss&Waste). The colored lines cutting across these axes represent the average for: high income countries ("High income", **green**), the EU-28 group (**blue**), Italy (**red**), the 67 countries evaluated using the FSI ("FSI average", **gray**), and the countries in the Mediterranean region ("Mediterr.", **ocher**).

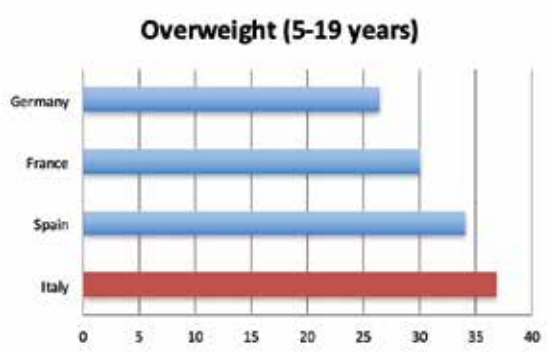
Nutritional Challenges

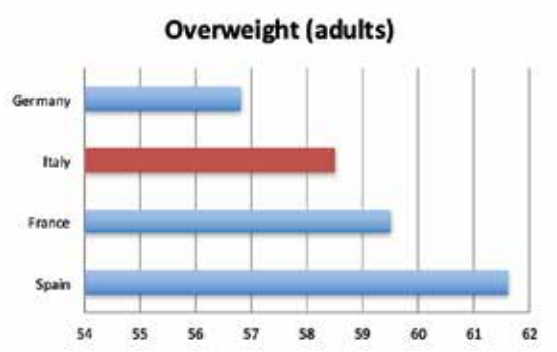
In terms of nutritional challenges, Italy ranks 34th (out of the 67 countries included in the study), 30th out of the high-income countries, and 24th in Europe (EU-28). This section examines life expectancy, and also healthy life expectancy, and the variables affecting its length, such as dietary composition and physical activity. It ends by looking at a number of best practices in Italy aimed at promoting a healthy lifestyle.

Life expectancy at birth puts Italians among the longest-living people in the world: in 2016 life expectancy was approximately 83 years, second only to Japan at 84 years[4]. Italy also leads the way in healthy life expectancy, 73 years[5], which refers to the **average number of years a person can expect to live in "full health"**, in the absence of disabilities caused by disease and/or injuries. However, the indicators for malnutrition due to excess and lifestyles **point to a reversal of this trend**.

The data for overweight are a cause for concern and explain Italy's low ranking in this respect. The **prevalence of overweight among children and adolescents aged 5-19[6] is 37%**, which puts Italy in 27th place among European and high-income countries. **The percentage of overweight adults is 59%**. Due to this indicator, Italy ranks 15th in Europe (where the prevalence of overweight ranges from 54% in Austria to 66% in Malta).

Prevalence of overweight among Italian children and adolescents and among Italian adults compared to Germany, France and Spain (percent).





Only 59% of Italians reach the recommended levels of weekly physical activity[7]. According to the World Health Organization (WHO), adults aged 18-64 engage in at least 150 minutes of moderate-intensity aerobic physical activity throughout the week or do at least 75 minutes of vigorous-intensity aerobic physical activity throughout the week or an equivalent combination of moderate- and vigorous-intensity activity[8]. "Physical activity" is defined as any bodily movement produced by skeletal muscles requiring energy expenditure; this definition includes sports, physical exercise and other activities such as walking, household chores or gardening[9]. The growth of the service sector, long working days and largely sedentary lifestyle, coupled with high levels of urbanization and frequent use of private means of transport, are all obstacles to an active lifestyle, which must be fostered through a coordinated public health plan that goes beyond educating citizens individually.

At the same time, the analysis of eating habits shows that Italians are **gradually shifting away from the traditional Mediterranean diet**. The data for sugar consumption show that, in the form of added sugar, it makes up 9% of total calorie intake[10]. The WHO recommends reducing the intake of free sugars to less than 10% of daily calorie requirements, and a further conditional recommendation of reduction below 5% of total calorie intake[11].

However, **sodium consumption**, a risk factor for hypertension, is where **Italy deviates most significantly from the recommendations**, with a per capita consumption of approximately 4 g per day[12]. Overconsumption of salt is associated with increased blood pressure, which in turn is a major risk factor for the onset of cardiovascular diseases. The WHO recommends a maximum intake of 5 g of salt a day, which corresponds to **approximately 2 g of sodium**. Given that most of our salt intake comes from **food products** (bread and bakery products, cheese and cured meat) or is naturally found in some foods, and that limiting salt only partly affects daily consumption, the challenge is to raise consumer awareness but also to promote the reduction of salt used in processed foods[13].

Although the prevalence of **malnutrition** in Italy is low (3% of the population[14]) compared to the other countries in the FSI study, this is a major challenge and is closely linked to poverty. According to ISTAT estimates, in 2018, over 1.8 million households were living in absolute poverty, 7.0% of the total, amounting to 5 million individuals (8.4% of the population).

Italy does not have a nationwide government policy on nutrition and health but has adopted the European Food and Nutrition Action Plan 2015–2020. Italy gives great importance to nutrition in schools, although **nutrition education is not currently a compulsory subject in the national curriculum** of primary and secondary school.

Best Practices

The "**Guadagnare Salute**. Rendere facili le scelte salutari" (Getting healthier: making healthy choices easier) program was approved by the government in a Prime Ministerial Decree issued on May 4, 2007. It involves **various ministries working in close partnership and implements a "policy of alliances"** among different stakeholders and sectors of society (including local authorities, organizations, bodies, associations, institutions and so on). The goal of the program is to invest in the prevention and control of chronic diseases in order to improve the quality of life and wellbeing of individuals and society as a whole by promoting healthy lifestyles. Its actions are specifically targeted at the main health risk factors with a focus on four main areas of intervention: promoting healthy eating behaviors, fighting smoke addiction, combating high-risk levels of alcohol consumption, and promoting physical activity[15].

"**Sport di Classe**" (Sport Class) is a project run by the Ministry of Education, Universities and Research (MIUR) in partnership with the Italian National Olympic Committee (CONI), promoting physical activity at school and rolled out in elementary schools across 8 Italian regions (Abruzzo, Basilicata, Calabria, Campania, Molise, Apulia, Sardinia and Sicily). It falls within the scope of the National Operational Programme (NOP) and is financed by the European Social Fund 2014-2020. It aims to increase the amount of time dedicated to physical exercise and sport by approximately 2 hours per week (60 hours per school year). [16]

"**Frutta e verdura nelle scuole**" (Fruit and vegetables in school) is a program promoted by the European Union, coordinated by the Ministry of Agricultural, Food and Forestry Policies (MIPAAFT), and delivered in partnership with the Ministry of Education, Universities and Research (MIUR), the Ministry of Health, the Agricultural Payments Agency (AGEA), and the autonomous regional and provincial councils of Trento and Bolzano. The program is addressed to elementary and middle school pupils aged 6-11, who take part in it free of charge[17]. Its goal is to encourage children to eat fruit and vegetables and to help them develop healthy eating habits. To this end, the program includes teacher training initiatives on nutrition education topics as well as combined play and learning initiatives that encourage pupils to consume and taste the distributed products. Over the years, the program has been delivered on average to 1 million pupils, and since its roll-out the results have shown increasing fruit and vegetable consumption by the children and their families.

NOTES

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[5] WHO, GHO database, 2012. http://apps.who.int/gho/data/node.main.HALE?lang=en

[6] Overweight is defined as Body Mass Index over 25 Kg/m2 in adults and BMI > 1 standard deviation over the median in children .

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[8] WHO, 2011. Global Recommendations on Physical Activity for Health. https://www.who.int/dietphysicalactivity/physical-activity-recommendations-18-64years.pdf?ua=1

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[10] FAO, 2013 http://www.fao.org/faostat/en/#data/FBS

[11] WHO, 2015. Sugars intake for adults and children. https://www.who.int/nutrition/publications/guidelines/sugars_intake/en/

[12] Powles, John, et al. 2013, "Global, regional and national sodium intakes in 1990 and 2010: a systematic analysis of 24 h urinary sodium excretion and dietary surveys worldwide."

[13] Italian Ministry of Health, 2018. Salt consumption and health. http://www.salute.gov.it/portale/temi/p2_6.jsp?lingua=italiano&id=4950&area=stiliVita&menu=alimentazione

[14] FAO, 2015 http://www.fao.org/faostat/en/#data/FS

[15] https://www.epicentro.iss.it/guadagnare-salute/

[16] http://www.progettosportdiclasse.it

[17] http://www.fruttanellescuole.gov.it/

NUTRITION: A CHALLENGE TO OVERCOME

ITALY IS BELOW THE EU AVERAGE WITH REGARD TO NUTRITIONAL CHALLENGES

STRENGTHS

1. HIGH LIFE AND HEALTHY LIFE EXPECTANCY

	LIFE EXPECTANCY	HEALTHY LIFE EXPECTANCY
JAPAN	84	75
ITALY	83	73
GERMANY	81	71
CHINA	76	68
USA	79	70

2. NUMEROUS INITIATIVES TO PROMOTE HEALTHY LIFESTYLES

GETTING HEALTHIER

Multiannual program run by the Italian government to promote healthy eating habits, combat smoking and risky alcohol consumption, encourage physical activity

SPORT CLASS

Project run by the Italian Ministry of Education and the Italian Olympic Committee to promote physical education and activity in primary schools

FRUIT AND VEGETABLES IN SCHOOLS

EU program to encourage children (6-11) to eat fruit and vegetables and to help them develop healthy eating habits

AREAS FOR IMPROVEMENT

1. OVERWEIGHT PREVAILS*

	CHILDREN AND TEENAGERS (5-19)	ADULTS (18-64)
ITALY	37%	59%
SPAIN	34%	62%
FRANCE	30%	60%
GERMANY	26%	57%

** An adult is overweight when their body mass index (BMI) is above 25 Kg/m² (BMI = weight in Kg divided by height in meters squared). Overweight children and teenagers: BMI>+1 standard deviation above the median*

2. WE ARE TOO SEDENTARY

ADULTS (18-64) WITH INSUFFICIENT PHYSICAL ACTIVITY

41%	37%	16%	28%
ITALY	HIGH INCOME COUNTRIES	LOW INCOME COUNTRIES	WORLD

3. WE CONSUME TOO MUCH SODIUM

RECOMMENDED CONSUMPTION: 2 G PER DAY

DAILY CONSUMPTION (G/PER CAPITA)

4.4	4.0	3.8	3.5
ITALY	SPAIN	FRANCE	GERMANY

SODIUM IS MOSTLY FOUND IN PROCESSED FOOD.
OVERCONSUMPTION OF SALT INCREASES BLOOD PRESSURE

Sources: *Food Sustainability Index 2018; WHO 2016, Prevalence of overweight among children and adolescents, BMI>+1 standard deviation above the median, crude. Estimates by country, among children aged 5-19 years; WHO 2016, Prevalence of overweight among adults, BMI ≥ 25, age-standardized. Estimates by country; Regina, Guthold, et al. 2016, Worldwide trends in insufficient physical activity from 2001 to 2016: a pooled analysis of 358 population-based surveys with 1.9 million participants; Powles, John, et al. 2013, Global, regional and national sodium intakes in 1990 and 2010: a systematic analysis of 24 urinary sodium excretion and dietary surveys worldwide.*

Agriculture

In the area of agriculture, Italy ranks 27th out of the 67 countries included in the FSI study, 19th out of the 35 high-income countries, and 14th out of the EU countries[18].

Looking at the water resources, we can highlight the data relating to the **water footprint per person per day, which is around 6,300 liters**. This is approximately 6% lower than Spain and 20% lower than that of the United States, but 30% higher compared to France[19]. **Agricultural water withdrawal accounts for 6.74%[20] of the country's total renewable water resources**, a good performance compared to a number of othercountries in the Mediterranean region, such as Greece (11.58%), Spain (22.84%) and Israel (57.08%). One of the factors contributing to this result is the increasing adoption of efficient irrigation techniques.

According to the latest ISTAT survey, almost **30% of Italy's irrigated agricultural area uses micro irrigation**[21], a more efficient system compared to other available technologies (15% less compared to sprinkler irrigation techniques and 80% less than flood irrigation). Also, as pointed out in the UN World Water Development Report 2018, **nature-based solutions play an important role in the management of water resources, and in Italy there are several research projects** (such as GESTIRE2020[22], MGN Making Good Natura[23], Operandum[24]) **and local policy initiatives in place[25] whose goal is to promote these solutions** by recognizing the importance of so-called ecosystem services. Looking at "indirect" water consumption due to imported food (or virtual water trade), Italy imports over 6,000 Mm^3 of water per year, a figure exceeded only by the United Kingdom and Germany

in the EU-28[26] group . Finally, over **75% of Italy's fish stocks are overexploited or collapsed**[27].

Concerning soil and land (land use, biodiversity and human capital), Italy shows **poor results on the aspects linked to the environmental impact of agriculture on land**. The carbon content of soil as a percentage of weight is only 1.1%[28]. This is in line with other EU countries in the Mediterranean region like Greece and Spain, but lower than in other EU member countries like France, Germany and Finland, which is in the lead with an average carbon content of soil of 11% (of weight). In this respect, Italy falls short of the 1.5% threshold below which land is considered to be at risk of desertification.

The arable land used for animal feed and biofuels production accounts for only 4.7% of Italy's total agricultural land[29], a far lower percentage than Argentina's at 49.3%. It is nevertheless one of the highest in Europe (only Croatia's is higher at 14.4%). In addition, **11.5% of Italy's agricultural land is farmed organically**[30], which is the highest percentage among the countries in the Mediterranean region and the 6th in Europe.

Finally, looking at the top three crops grown in Italy (grapes, wheat and maize), their share of total agricultural production is 40%. Italy thus has a high level of agricultural biodiversity compared to other European countries. The figure is, indeed, higher for Portugal (48.2%), France (64.2%) and Germany (65.1%), while in Spain (31.5%) and Greece (34.9%) it is lower, thereby reflecting the greater diversification of their agricultural systems.

Statistics on the agricultural workforce show that women represent 38.8%[31] of farmers in Italy (in Sweden the percentage goes up to 68%), and **young people represent only 5%**[32]. As a result, **the average age of Italian farmers is 57**[33], which is higher than the European average of around 53, higher than other EU countries such as Spain (55), France (49) and Greece (49). According to recent statistics, however, there is a **renewed interest among young people in farming as a**

career[34]. Italy has a high score for working conditions in agriculture[35] and on availability of insurance for farmers. Italian farmers have access to different insurance options, ranging from protection gainst a single risk (such as weather-related damage or illness) to schemes based on agricultural indicators (e.g. rainfall thresholds) affecting income from farming. The agricultural sector continues to be plagued by a high number of illegal workers (over 400,000) and by worker exploitation resulting from illegal recruitment (with over 130,000 people at risk), a scourge that Law no. 199/2016 has begun to tackle in order to reduce the impact of this hidden economy with an estimated value of around EUR 200 billion[36].

In Italy, **annual greenhouse gas emissions from agriculture amount to 29,383 of Gg CO_2 equivalent**[37]. They are lower than in other countries like Spain, the United Kingdom, Germany and France, and significantly lower than in the United States (with 359,950 Gg of CO_2 equivalent). With regard to annual greenhouse gas emissions from agriculture, 64% are due to livestock farming and 36% to crop production[38]. **Italy also performs well among European countries on greenhouse gas emissions per unit of productive agricultural area**, with around 2.3 Gg of CO_2 equivalent per hectare of farmland. France, Germany and the United Kingdom have higher emissions, while Spain's are lower, at 1.6 Gg of CO_2 equivalent[39]. On the other hand, there are **limited opportunities to invest in sustainable agriculture and to mitigate climate change** in Italy due to the absence of a dedicated government strategy to promote such investments. In this respect, however, there are **positive signals from the research funding provided in the field of biotechnologies for sustainable agriculture and financial support for agricultural SMEs**, in partnership with the European Union.

Best Practices

The government has funded a three-year research program on sustainable biotechnologies for agriculture, to be implemented by Italy's **Council for Agricultural Research and Analysis of Agricultural Economics (CREA)**. The goal of the project is to develop new genetic engineering techniques similar to traditional hybridization techniques in order to improve crop plant resistance to diseases and climate change, and to enhance the nutritional value of crops. The three-year Plan involves laboratory-based research initiatives, in accordance with existing legislation, using the most advanced and sustainable biotechnologies, such as genome editing and cisgenesis, to achieve a genetic improvement in plants so as to enhance their adaptation climate change.

The **RURAL project** (RedUcing distance between Research and AgriculturaL enterprises) run by the Euro-Mediterranean Center on Climate Change (CMCC) addresses the issues emerged for the Italian agriculture through joint programs. The project, conducted with the direct participation of several Italian agricultural enterprises, aims to protect and enhance agricultural ecosystems by encouraging the adoption of sustainable farming practices in order to increase soil carbon storage and preserve biodiversity, sharing best practices and creating synergies among local stakeholders.

The Euro-Mediterranean Center on Climate Change (CMCC), Fondazione Cariplo and the Lombardy Regional Government, promote **local research projects and policies** based on the concept of ecosystem services to foster the development and promotion of nature-based water management and biodiversity conservation solutions. Its grant programs supporting Natural Capital, for example, mobilize private stakeholders in the preservation of ecosystems through payment schemes for ecosystem services.

NOTES

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[37] FAOSTAT, 2016. http://www.fao.org/faostat/en/#data/GT

[38] FAOSTAT, 2015. http://www.fao.org/faostat/en/#data/GT

[39] Emissions per unit of productive agricultural area have been calculated based on UAA (Utilized Agricultural Area) data for 2010 (https://ec.europa.eu/eurostat/documents/3930297/5968754/KS-FK-13-001-EN.PDF/ef39caf7-60b9-4ab3-b9dc-3175b15feaa6); https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Figure_10_Aggregated_emissions_of_CH4_and_N2O_per_hectare_of_UAA_(kilotonnes_CO2_equivalent_per_thousand_hectares),_2015.png

REDUCING THE ENVIRONMENTAL IMPACT OF AGRICULTURE

THE FOOD SYSTEM CONTRIBUTES UP TO 37% OF GLOBAL GREENHOUSE GAS EMISSIONS

INCLUDING PRE- AND POST-PRODUCTION AGRICULTURAL ACTIVITIES: E.G. ANIMAL FEED, TRANSPORT, PACKAGING

GREENHOUSE GAS EMISSIONS DUE TO AGRICULTURE IN ITALY ARE IN LINE WITH THE AVERAGE FOR EU COUNTRIES

ITALY IS THE THIRD AGRICULTURAL PRODUCER IN EUROPE

GRAPES, WHEAT AND MAIZE ACCOUNT FOR 40% OF TOTAL NATIONAL PRODUCTION

CONTRIBUTION TO THE VALUE OF EU AGRICULTURAL PRODUCTION (2017 DATA)

16.8%	13%	12.7%	11.7%	7.4%
FRANCE	GERMANY	ITALY	SPAIN	UK

STRENGTHS

NUMEROUS RESEARCH PROJECTS

for the protection of agricultural ecosystems and the enhancement of ecosystemic services

GOOD WORKING CONDITIONS

but there are over 400,000 illegal workers in agriculture with a 39% rate of illegality

PRESENCE OF INSURANCE COVER

connected with climate change

AREAS FOR IMPROVEMENT

1. PART OF AGRICULTURAL LAND IS AT RISK OF DESERTIFICATION

CARBON CONTENT IN THE SOIL
(% BY WEIGHT. <1.5 = POTENTIAL RISK OF DESERTIFICATION)

ITALY	SPAIN	FRANCE	GERMANY
1.10	1.23	1.42	3.01

2. WE IMPORT HIGH VOLUMES OF "VIRTUAL" WATER THROUGH THE FOOD TRADE

IMPORTS OF VIRTUAL FRESH WATER (FROM LAKES, RIVERS, AQUIFERS)
(MILLIONS OF CUBIC METERS/YEAR)

GERMANY	UK	ITALY	EU AVERAGE
8,300	7,600	6,000	1,100

3. ITALIAN FARMERS ARE PREVALENTLY OVER 55

AVERAGE AGE (YEARS)

ITALY	SPAIN	EU AVERAGE	FRANCE	LITHUANIA
57	55	53	49	46

4. YOUNG PEOPLE ARE FEW, IN LINE WITH THE EU AVERAGE

% OF FARMERS UNDER 35

ROMANIA	ITALY	EU AVERAGE	GERMANY
18	5	4.7	1

5. LACK OF AN AD HOC STRATEGY FOR INVESTMENTS IN SUSTAINABLE AGRICULTURE

BUT THERE ARE INCENTIVES FOR FIGHTING CLIMATE CHANGE AND INNOVATIVE TECHNOLOGIES IN AGRICULTURE

Sources: *Food Sustainability Index 2018;IPCC, Climate Change and Land, 2019; Eurostat, Economic accounts for agriculture, 2019.*

Food loss and waste

Italy ranks 31st out of the 67 countries included in the FSI, and 18th in the group of 35 high-income countries in terms of food loss and waste. This category refers to the amount of edible food lost upstream of the agri-food supply chain and the wastage that occurs during industrial food processing, retail and final consumption stages[40]. In Europe, Italy is 13th out of the 28 countries in this area (where the top performers are France, Luxembourg and the Netherlands and the bottom three are Malta, Bulgaria and Slovenia). Some recent research show how the cost of food waste in Italy is over 15 billion euros - corresponding at about 1% of GDP[41] - of which the vast majority (79%) produced at home. Estimated food losses during the production stage, on the other hand, amount to 2% of the total food produced (excluding the agricultural stage and taking into account the post-harvest stage through to industrial processing). This performance is good compared to other European countries (whose average is around 3%), and to high-income countries, whose average is almost 5%[42].

The level of per capita food waste is still very high, with around 65 kg being generated every year. In Europe, where the average is 58 kg, Italy lags considerably behind countries like Spain and the United Kingdom, where the level is around 55 kg per capita. Finally, Italy ranks 26th in the group of 35 high-income countries, where the average per capita food waste amounts to 57 kg, although its levels are still well below those of Belgium (87 kg) and the United States (95 kg)[43].

The policy response to combat food loss and waste is positive. In 2016, Italy rolled out a national food loss and waste prevention plan (also called PINPAS) that tackles the issue at the different levels of the food supply chain, with a particular focus on surplus food donations[44]. Also, building on the so-called "Buon Samaritano" (Good Samaritan) law (no. 155/2003), which gave liability protection to entities donating surplus food, the new law no. 166 2016 (also known as **Gadda Law**) has introduced further measures to facilitate surplus food donations. It has a highly participatory approach that has seen the active involvement of numerous third sector players and is different from France's mandatory approach, for example, whereby large-scale food retailers are punishable by law if

they fail to donate their unsold food to charities[45]. These kinds of laws are bound to have a significant impact, both direct and indirect, in the fight against food waste, as shown by the fact that, according to Italy's food bank network Banco Alimentare, donations have gone up by 20% in just one year. Despite this, Italy needs to step up its efforts to **put in place effective tools for measuring and monitoring its national performance**. Italy still **does not have a clear reduction target on food loss and waste** in line with target 12.3 under SDG12, which calls for reducing food losses and halving food waste. The United States, for example, has launched a plan that - though not legally binding - aims to cut food loss and waste in half by 2030, using the year 2010 as the baseline for monitoring progress[46]. Another positive step is **the decision to appoint a Technical-Scientific Committee to oversee the national regulations on food waste** in the implementation of the national waste prevention program run by the Ministry of the Environment[47].

Italy has introduced a range of market mechanisms designed to reduce household waste. There are four measures in particular that can directly or indirectly affect food waste: **financial incentives** (a waste disposal fee also known as Eco-Tax)[48]; **incentives for the production of biomass energy; tax deductions for surplus food donations; and a review of waste disposal rates** (e.g. the Waste collection tax – Ta.Ri). However, individual towns and cities will be chiefly responsible for the effective management of these tools. In many cases, proposals are being put forward to review the Ta.Ri tax as a key incentive for boosting the distribution of surplus food and reducing food waste from households and retailers. This involves a major administrative task that requires not only changes to existing local regulations but also an accurate mapping of the actual demand for donated food, as well as an effective data validation process. In addition to these incentives, **voluntary agreements** are an important tool available to the private sector

for promoting the adoption of waste prevention measures. In this respect, numerous regional authorities have stipulated voluntary agreements, although some are only pilot schemes while others are still at the preliminary stages of implementation. In 2018, Lazio[49], Apulia[50] and Piedmont[51] were among the most active regions in this respect. There are numerous charities in Italy dealing with food donations on a nationwide scale - the oldest among them being Banco Alimentare - with which the local authorities have signed several protocols, alongside producer and consumer organizations, in order to reduce waste and foster the growth of more virtuous and more sustainable agri-food supply chains.

A number of academic institutions in Italy have been engaged in research on food waste. The University of Bologna has actively contributed to the drafting of the PINPAS prevention plan and participates in numerous Italian (Reduce)[52] and European (Fusions[53] and Refresh[54]) research programs. Also, in 2018, the Italian Ministry of Agriculture approved 14 projects totaling EUR 700,000, conducted by public institutions, universities, NGOs and businesses. These projects will be useful in a number of key areas, such as extending the use-by date of many products, improving the use of new packaging technologies, developing apps and digital platforms, recovering food surpluses across the entire supply chain, and facilitating the distribution of food to the most vulnerable groups in the population[55]. Finally, numerous regions, notable among them Lombardy[56] and Emilia-Romagna[57], have funded projects designed to combat food waste.

Despite the significant regulatory efforts made with the introduction of the Gadda Law in 2016, more needs to be done in order to combat food waste, including strengthening the actions taken by the various stakeholders, promoting a food waste monitoring system, and setting specific reduction targets consistent with the 2030 Agenda. Additional measures such as providing financial incentives, increasing tax deductions for donating food surpluses and reviewing waste disposal fees could help to further reduce waste.

Best practices

The **City of Milan sets an exemplary best practice model in fighting food loss and waste** at the urban level. The local government's policy program includes a series of actions, implemented in synergy with numerous players, designed to meet the target of halving food waste and loss by 2030. These actions will be pursued not only locally but also within at international level, including the Milan Urban Food Policy Pact (MUFPP) and other key groups such as EUROCITIES[58].

The private sector has also launched a range of initiatives to combat food waste and loss, also by by taking full advantage of the potential of technology and the digital world. One of the most interesting of these is **Last Minute Sotto Casa** (Last Minute at your doorstep), an app that connects users with local food retailers when the stores are about to close, and enables customers to buy their still fresh but unsold products with price discounts of up to 50%. In Turin alone, the app has helped reduce monthly food waste by up to 3 tons.

Another very interesting tool is **REGUSTO**, a platform for municipal administrations aimed at implementing and optimizing the recovery of surplus food and redistributing it to the weakest members of society. It works by connecting "donors" of surplus food (supermarkets, canteens, industries, restaurants, and so on) in real time with the operators of non-profit organizations equipped to recover it. The system makes it possible to monitor recovery flows and extrapolate statistical data at regular intervals in order to determine the social and environmental impact of the initiative[59].

NOTES

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[47] http://www.minambiente.it/sites/default/files/archivio_immagini/Galletti/Comunicati/alma_mater_bologna/file%20def/Protocollo%20di%20Intesa%20MATTM-ANCI-SPRECOZERONET.pdf

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[49] http://www.ecodallecitta.it/notizie/389017/regione-lazio-firmato-protocollo-contro-gli-sprechi-alimentari/

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[52] http://www.sprecozero.it/cose-il-progetto-reduce/

[53] http://www.eu-fusions.org/phocadownload/country-report/FUSIONS%20IT%20Country%20Report%2030.06.pdf

[54] https://eu-refresh.org/about-refresh#about-the-project

[55] https://www.politicheagricole.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/13475

[56] http://www.regione.lombardia.it/wps/portal/istituzionale/HP/DettaglioRedazionale/servizi-e-informazioni/cittadini/Tutela-ambientale/Gestione-dei-rifiuti/reti-territoriali-virtuose-contro-spreco-alimentare/reti-territoriali-virtuose-contro-spreco-alimentare

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[58] BCFN, MUFPP, 2018. Food & Cities. The role of cities for achieving the Sustainable Development Goals. www.barillacfn.com.

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FOOD WASTE
A GROWING COMMITMENT TO REDUCE IT

ITALY IS IN LINE WITH THE EU AVERAGE FOR FOOD LOSS AND WASTE

FOOD LOSS: UPSTREAM OF THE AGRI-FOOD SUPPLY CHAIN TO INDUSTRIAL PROCESSING.
FOOD WASTE: DISTRIBUTION AND CONSUMPTION

EVERY YEAR IN THE WORLD
WE WASTE 1.3 BILLION* TONNES OF FOOD

** The figure corresponds to both food loss and food waste.*

FOOD WASTE IN ITALY COSTS OVER 15 BILLION EUROS PER YEAR (1% OF GDP)

STRENGTHS

INNOVATIVE LEGISLATION

- The Gadda Law (166/2016) makes it easier to donate surplus food: +20% after the first year
- National Plan for Preventing Food Waste approved in 2016

PUBLIC-PRIVATE PARTNERSHIPS

- Voluntary agreements between companies, local authorities and charities of producers and consumers

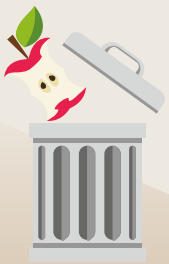
INTEREST IN SCIENTIFIC RESEARCH

- In 2018, the Italian Ministry of Agriculture funded 14 projects between public institutions, universities, NGOs and companies
- Participation in many projects funded by the European Union

AREAS FOR IMPROVEMENT

1. FOOD WASTE STILL HIGH

ANNUAL FOOD WASTE PER CAPITA (KG)



65	58	55	55
ITALY	EU AVERAGE	SPAIN	UK

2. WE HAVE NO SPECIFIC REDUCTION TARGET

ACCORDING TO THE 2030 AGENDA, COUNTRIES MUST "REDUCE FOOD LOSS AND HALVE FOOD WASTE BY 2030"

(SUSTAINABLE DEVELOPMENT GOAL 12.3)

3. THERE IS NO NATIONAL MEASUREMENT AND MONITORING SYSTEM

Source: *Food Sustainability Index 2018; FAO 2011; Waste Watcher 2019.*

Notes on Methodology

The Food Sustainability Index (FSI) measures food sustainability in 67 countries across the world. It includes high income, middle income and low income countries, with a wide geographic distribution, representing over 90% of global GDP and over four-fifths of the global population.

The FSI uses 37 indicators and 89 individual metrics, organized across the three Index categories. Data were gathered from international, national and private sources, including the Economist Intelligence Unit's internal databases. In cases where data were incomplete or missing, the EIU developed estimation models that aggregate proxy data series and use statistical analysis to estimate data points, where appropriate. In 2018, the FSI was revised to ensure that it uses the most up-to-date sources. The main institutional sources used include the United Nations Food and Agriculture Organization, the World Bank Group, the World Health Organization, the European Commission, World Resources Institute's Aqueduct, the Sustainable Development Solutions Network, the SDG UNSTATS database, the BP Statistical Review of World Energy, UNICEF, UNESCO, UN Comtrade, the Land Matrix, the Animal Protection Index, the ITUC Global Rights Index, and journal articles and studies by respected academics[60].

Sub-Saharan Africa	Burkina Faso, Cameroon, Côte d'Ivoire, Ethiopia, Ghana, Kenya, Mozambique, Nigeria, Rwanda, Senegal, Sierra Leone, South Africa, Sudan, Tanzania, Uganda, Zambia, Zimbabwe
Asia Pacific	Australia, China, India, Indonesia, Japan, South Korea
Europe and Central Asia	Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Russia, Slovakia, Slovenia, Spain, Sweden, Turkey, United Kingdom
Latin America	Argentina, Brazil, Colombia, Mexico
Middle East and North Africa	Egypt, Israel, Jordan, Lebanon, Morocco, Saudi Arabia, Tunisia, United Arab Emirates
North America	Canada, United States

NOTES

[60] For further information on the methodology, visit http://foodsustainability.eiu.com/wp-content/uploads/sites/34/2019/01/FSI-2018-Methodology-Paper_full_January-2019.pdf

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