

THE SUSTAINABILITY OF MEAT AND CURED MEATS IN ITALY



SYNTHESIS 2016

THE 5 ASPECTS OF MEAT SUSTAINABILITY

To analyse the sustainability of meat and cured meats, means to study as objectively as possible the different topics that concern both the consumer and livestock production. For this reason the Study written by **Sustainable Meat** analyses **nutrition, environmental impacts, food safety and animal welfare, economic aspect and food waste**.

The full Report, of which this is a summary, is available on the **Sustainable Meat Association's website**.



www.carnisostenibili.it/en

THE NOVELTIES OF THIS EDITION

The 2016 version of the Meat and cured meats Sustainability Report in Italy is characterised by a **higher level of discussion** on the issues proposed with particular reference to the themes of nutrition, environmental impacts, food safety and animal welfare. The goal is always to handle as objectively as possible an extremely complex subject that foresees the integrated analysis of aspects that are also very different.

THE REASONS FOR THIS PROJECT

Meat consumption is increasingly becoming the subject of attention and criticism, principally related to nutritional, ethical and environmental reasons. To this international debate organisations and stakeholders have participated and will participate driven by different motivations: animal welfare organisations and/or environmental organisations, research centres, media, etc. In this context, at least in Italy, the point of view of meat producers has never been inserted, who felt the need to **join the discussion** by providing information, details and objective data useful to correct, where necessary, some preliminary or not completely correct positions. With this goal, in 2012, the Sustainable Meat Project was born, which by exploiting the various communication systems, is bringing to people's attention the results of the commitments of the various operators of the sector with the intention of of-

fering not a monolithic and uncompromising position but a **starting point** for a constructive and transparent debate, free from preconceptions and extreme positions, and moved by the desire for scientific and objective analysis.

The objective of these documents and communications is not to convince those who for indisputable personal reasons choose not to eat meat, but to reassure those who, equally consciously, choose to include also animal protein in their diet, informing them that **consuming meat with equilibrium is sustainable both for health and environment as well.**



CONTEXT

The growing awareness towards food sustainability, and in particular that of meat and cured meats, leads to increase the attention ever more to the elements that define the main features: **health, safety**, production **respectful of the environment** as well as **economic viability** for businesses and consumers.

Talking about **nutrition** means discussing both the theme of **consumption** and of the **nutritional value** of meat and cured meats in people's diet. With regards to consumption, there is no doubt that the growth of the world population, expected to be 9 billion people in 2050, compared with 7 billion today, will inevitably result in an increased demand for food, especially animal protein, for which there is expected an increase in demand of about 60% (Source: FAO).

In assessing the current level of meat consumption worldwide it is not the absolute value that should make us reflect but rather the **extreme difference between pro capita consumption** in the various areas of the world, with values ranging from about **120 kg/year in North American countries** to less than **40 in Asia and Africa**. This variability is critical because all the recent considerations regarding the alleged diseases and the environmental impacts associated with meat consumption **should be measured by the real local scenarios**.

Regarding the nutritional issue in a strict sense, science has however identified very clearly what the **nutritional value** of meat is and of the micronutrients contained in them. What is not so clear instead are the associations, assumed by some studies, between **meat consumption and the onset of certain diseases** such as cancer. In both cases, the most certain conclusion is that a **balanced diet**, consistent with the Mediter-

anean Diet, that proposes a moderate consumption of meat represents an adequate nutritional model, capable of delivering all the **necessary nutrients to our body without risks to health**.

In addition to being nutrient, food should also be **safe**. The quality and food safety, in Italy as well as throughout the European Union, are based on a strategy that foresees the prevention of any risk to consumer health **all along the production chain**. Regarding the issue of security it is also important to dispel some **false stereotypes**, such as those relating to the systematic use of hormones and antibiotics in livestock: in fact **hormones** have been banned in the whole of Europe for decades, while **antibiotics are permitted only under strict veterinary control** and following strict administrative protocols, designed to avoid, on the one hand the presence of antibiotic residues in meat, and on the other, the onset of possible phenomena of antibiotic-resistance.

The issue of security is closely linked to that of **animal welfare**. Maintaining in animals a state of good physical and mental health is an indispensable prerequisite to ensure their sustainable livelihoods, but is also a crucial element in ensuring the safety of foods derived from them. The evolution of public awareness **has meant that, since the 80s**, this issue is fully covered by legislation, establishing minimum conditions of well-being that must be respected: in many cases a violation of these rules is considered a **criminal offense** in Italy.

That of **respect for the environment** is one of the latest issues that is faced when it comes to talking about food; with regards to meat and cured meats it is also one of the most

controversial because these products are characterised by a **higher impact per kg**: but limiting oneself to just this data, you lose however some very important aspects.

The first is that **the analysis per kg does not take into account the actual consumption of food**. If environmental impacts are related to the **reduced weekly servings recommended by nutritionists**, in fact, it can be seen how in a balanced diet the impacts of meat and cured meats are not as high as would be supposed by the analysis of data per kg. This message is the basis of the **Environmental Hourglass**, the communication symbol of the entire Sustainable Meat Project.

The second refers to the deep integration of animal husbandry in the whole agri-food sector, which through multiple and continuous exchanges of raw materials and resources makes the various systems (agricultural and livestock) more efficient and sustainable from an **economical** point of view.

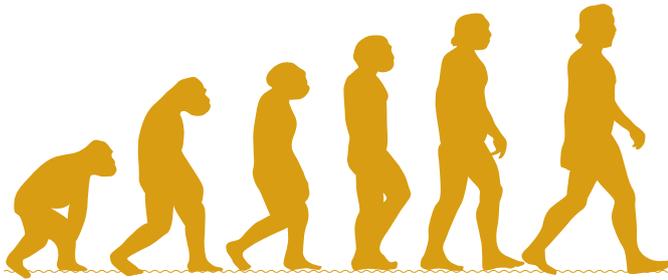
In fact the pursuit of **economic** sustainability is one of the **objectives to be pursued** in order to reduce the risk of abandonment of the countryside by farmers. To such an end, the tendency is increasingly widespread of small operators to **aggregate** into cooperatives or into small and **large industries**. This permits them to optimise costs and especially to access advanced technological systems that allow the increase in productive efficiency, with a consequent **saving of resources and reduction of the environmental impact**.

A similar form of “efficient farming” should be seen in a positive way, because it is one of the ways to meet the challenge that is the basis of sustainability: “**produce more to meet the needs of a growing number of inhabitants of the planet, consuming fewer resources**”.





MEAT IN THE MEDITERRANEAN DIET



The meat is part of human nutrition since the dawn of human history.

The first tribes of hunter-gatherers based their livelihood on hunting and wild growing plants. Subsequently, the constant use of fire to cook (**the first processed food was the bread**) food and the phasing out of hunting and harvesting practices in favour of farming laid the basis for the **birth of agriculture**.

With it man changed not only his lifestyle, which from nomadic became stable, but also his eating habits and the natural environment where he settled. **The practices of cultivation are accompanied by the first forms of animal domestication**, selected and bred to help work in the fields and to provide food, wool, and leather. The **foundations of what is now known as the “Mediterranean Diet” was created: a diet based on bread, cereals, fruit, vegetables, fish and meat.**

Over the centuries, the influences of first the Roman-barbarians and then medievalism reinforce the idea of eating meat as an essential requirement for a healthy diet. Meat remains an aspired food and desired over time, although the consumption habits vary a lot depending on the historical period and social class. Indeed, if until the thirteenth century, the practice of

agricultural, forestry and sheep-farming systems offered a varied diet, and allowed meat to be accessible to the entire population, successively one witnessed the formation of a gap between the rich and varied food supply of nobles in the cities, and the rural population, where economic hardship relegate the consumption of meat only to festive occasions. The culinary culture of the countryside develops, consequently giving priority to cereals, breads, legumes and vegetables, and inventing recipes to reuse all the cuts of meat, including offals, and minimising waste.

The shortage of meat in the diet of the rural population remains constant until the early twentieth century. In Italy it is only **since the Sixties** that the strong economic growth leads to an increase in meat consumption which becomes the **symbol of freedom from misery and poverty**.

To meet the growth in population and food consumption meat production is intensified: the food industry is structured to cope with the demand, on farms the watchword becomes efficiency in production. Since the eighties meat consumption in Italy is stable, and after food safety has become well-established, a change in sensitivity to issues of an ethical matrix, such as animal welfare, has occurred.

The challenge the meat industry faces today, is a more “sustainable” offer that can ensure efficient production, safe food, cares about the environment and animal welfare.



MEAT IS AN IMPORTANT
SOURCE OF PROTEIN,
ESSENTIAL AMINO
ACIDS AND OTHER
MICRONUTRIENTS USEFUL
TO THE HUMAN BODY

THE MEDITERRANEAN DIET
SUGGESTS A MODERATE
MEAT CONSUMPTION

MEAT CONSUMPTION
PER CAPITA IN ITALY
IS LOWER THAN OTHER
DEVELOPED COUNTRIES

THE NUTRITIONAL VALUE OF MEAT AND THE CONSUMPTION IN ITALY

THE VALUE OF A COMPLETE AND VARIED FOOD CONSUMPTION IN THE MEDITERRANEAN DIET

The Mediterranean Diet, promoted as an Intangible Cultural Heritage of Humanity by UNESCO, includes the consumption of **all foods without any exclusion** and suggests a high intake of vegetables, legumes, fresh and dried fruit. Meats and cured meats, which should be taken in moderate amounts, are important sources of **essential proteins** and other micronutrients, usually absent (**vitamin B12**), hardly present (**zinc, selenium, vitamin B2, PP**), or scarcely available (**iron**) in products of vegetable origin. Many of the micronutrients supplied by meat are involved in the regulation of energy metabolism processes. This can foster a **strong sense of satiety**, fundamental factors to **prevent obesity and diabetes**.

For a long time the consumption of meat and cured meats has been considered one of the main causes of cardiovascular diseases, due to the content of **saturated fat** and **cholesterol**. Recently the research is downsizing the role of saturated fats on cardiovascular disease, and today unlike in the past, the consumption of meat is addressed in particular to lean cuts with a very low percentage of saturated fats. A 100 g portion of meat provides, irrespective of the chosen cutting, **less than 30% of dietary cholesterol** intake suggested by the recommendations of specialists.

A reference to nutritional issues can not

be separated from remembering the close correlation between diet and the onset of specific medical conditions. In the case of meat, one of the subjects that arouse most concern is the alleged correlation between the consumption of meat and cured meats and some cancers. Although they are many hypothesis on this subject, **the direct relationship between diseases and moderate consumption has not been demonstrated**, and the only point on which the scientific studies agree is the recommendation to maintain consumption within the advised levels of moderation suggested by the nutritional model of Mediterranean Diet.

Moreover, analysing specifically the potentially harmful substances, it turns out that some of them are **not contained in meat and cured meats**, but are generated during high temperature cooking processes, such as the barbecue on an open flame, or added in the processing of transformed meat.

A further debated aspect concerns the **amount of meat** actually consumed, that according to some, is excessive.

To contribute to this discussion, many of the most authoritative sources of information concerning the Italian consumption have been consulted, observing that the available data refer to apparent consumption, that represent the statistic ca-

capacity of a country to produce meat, and not to the real consumption.

The Italian data (apparent and real) demonstrate a significantly **lower consumption of meat compared to the other developed countries such as North Europe, North America and Oceania**.



THE IMPORTANCE OF MEAT IN THE VARIOUS STAGES OF LIFE

Proteins, contained especially in meat and cured meats, are really important for pregnant women and for the cognitive development of children

PREGNANT WOMEN

Proteins are a primary nutrient because they provide the building blocks necessary for the construction of the unborn tissues: going from the two cells at fertilisation to about ten thousand billion of the infant! **The meats are important sources of heme iron, the most assimilated, critical to the child's cognitive development.**



The proteins are essential to **counteract the progressive loss of muscle mass** but also to prevent the **fragility of the skin, reduction of immune function**, resulting in a better recovery from disease. Meat and cured meats are therefore an integral part of a balanced diet for seniors because they provide high-quality proteins and micro-elements including **iron, zinc, selenium and vitamin B12**.



SENIOR CITIZENS

CHILDREN

Animal proteins, especially those from meat and cured meats, are very important for the physical and mental development of a child: **a portion from 70-100 grams of meat contains about 15-20 grams of proteins necessary** to reach daily requirements. **A correct intake of iron and vitamin B12** (the latter present only in foods of animal origin) is essential for **neurological development and growth**.



SPORTS

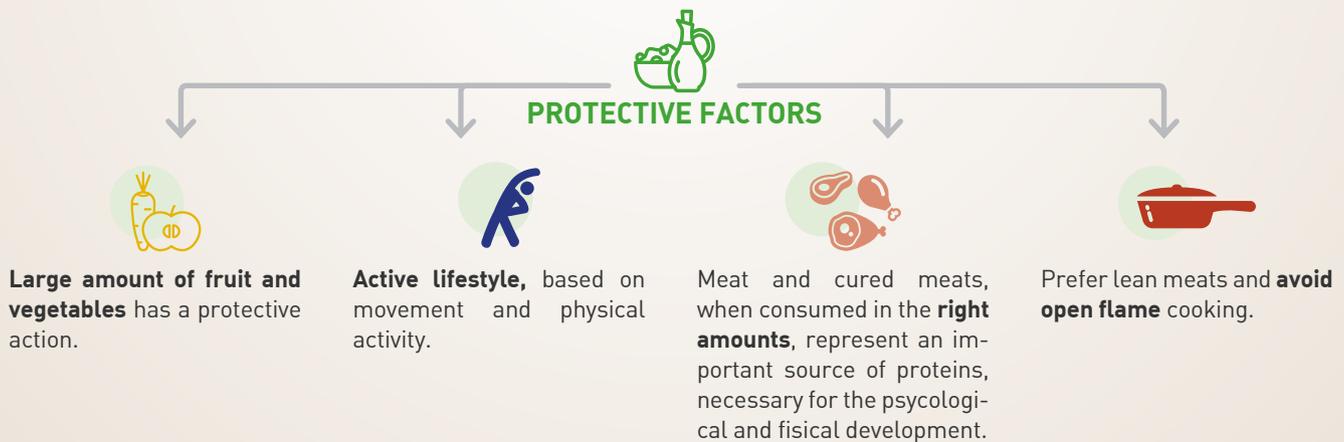
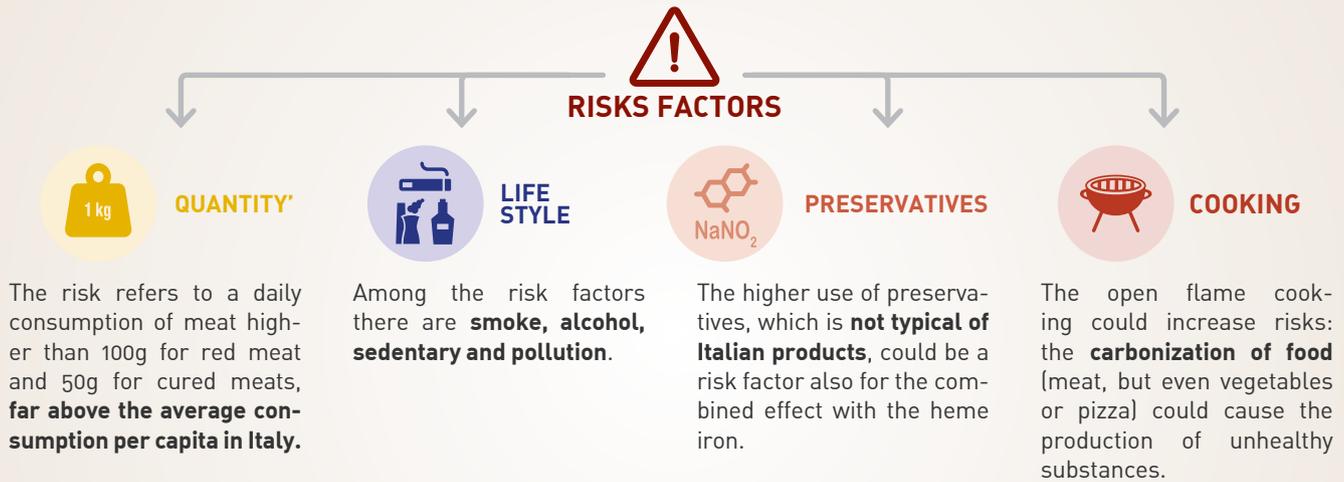
In the diet of athletes, **proteins are necessary for growth and tissue repair**. Many studies have shown that a consumption of protein, and more in particular the essential amino acids that constitute them, before, during, but especially immediately after training permits a correct recovery in muscle efficiency and its protein structure. For an optimum muscle development and a fully efficiency body: proteins, carbohydrates and a lot of training!



MEDITERRANEAN DIET: A LIFESTYLE TOWARD PREVENTION

The Mediterranean Diet plays a protective and preventive action especially when associated with an active lifestyle

The relationship between diet and health is quite difficult to study since the many elements, real or potential, that may favour the onset and the development of disease including cancer. IARC, the International Agency for Research on Cancer, identifies the potentially risky substances to provide elements of analysis to each National Authority.



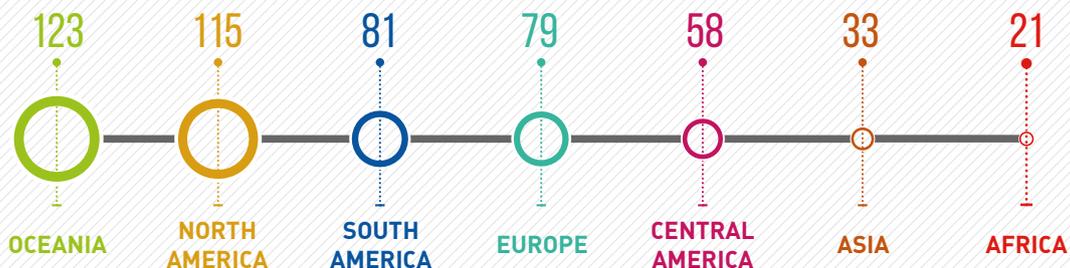


APPARENT CONSUMPTION OF MEAT IN THE WORLD

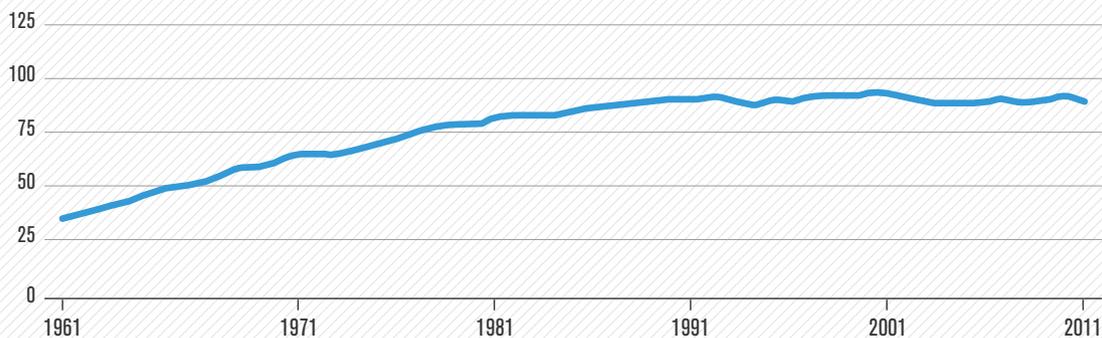
In Italy, the consumption of meat has been stable for 30 years

The processing of FAO data on food consumption, allows to obtain the per capita consumption of meat in the world. Among the developed countries, **Europe has the lowest figure**. The Italian data shows an increase in consumption between the postwar period and the '90s, **when the life expectancy is also increased**.

PER CAPITA APPARENT CONSUMPTION IN 2011 kg/year



PER CAPITA CONSUMPTION IN ITALY kg/year



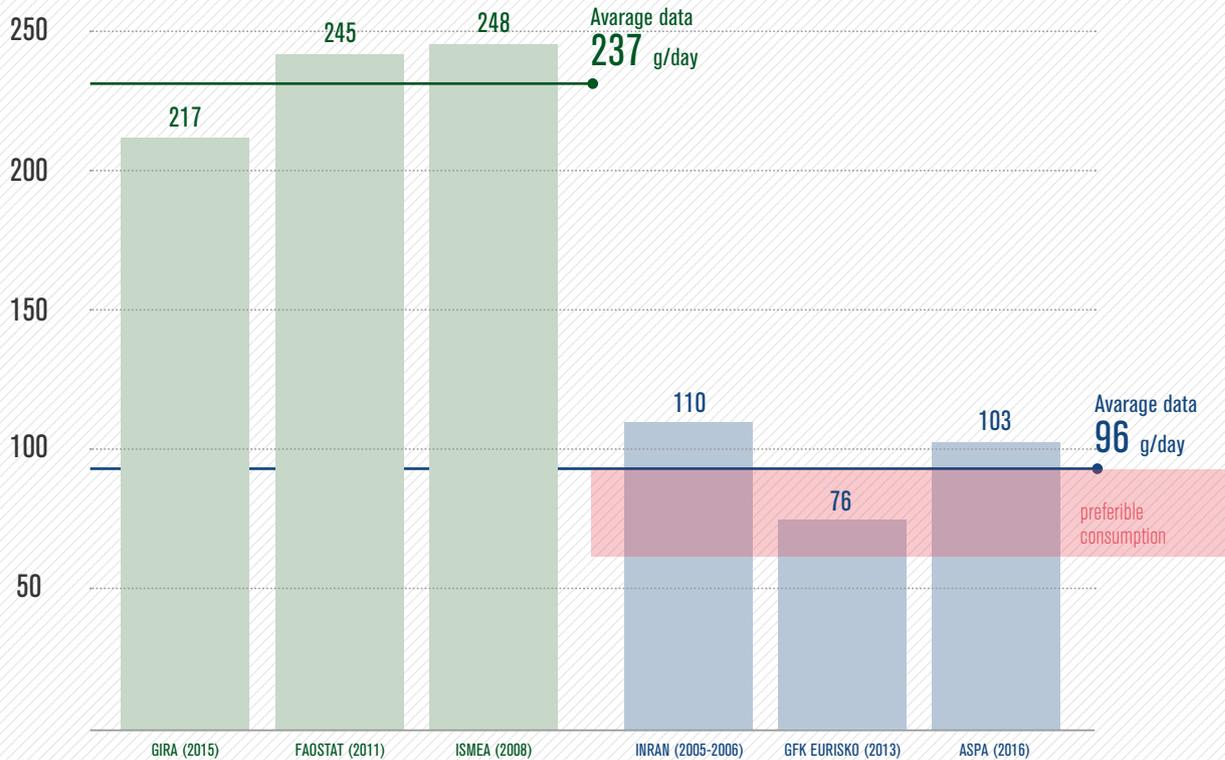
Source: FAOSTAT data related to all kind of meat



CONSUMPTION OF MEAT AND CURED MEATS IN ITALY

The real consumption of meat and cured meats in Italy is less than half compared to the apparent one, that is calculated for macroeconomic statistical purposes only

PER CAPITA TOTAL g/day



APPARENT CONSUMPTION

Estimation based on production data for macro-economic assessments. It is not feasible for use in nutritional considerations



REAL CONSUMPTION

Based on surveys involving consumers with the aim of assessing nutritional habits.

A person wearing a brown hat and a plaid shirt is walking away from the camera through a lush green cornfield. The corn plants are tall and vibrant. The background is slightly blurred, emphasizing the person in the foreground.

**THE LIFE CYCLE
ASSESSMENT (LCA)
METHODOLOGY
IS USED TO CALCULATE
THE ENVIRONMENTAL
IMPACTS OF THE
ENTIRE FOOD CHAIN**

**THE EUROPEAN
PRODUCTION SYSTEM
HAS A LOWER IMPACT
PER KG OF PROTEIN**

**IF CONSUMED
ACCORDING TO THE
MEDITERRANEAN
DIET, MEAT HAS AN
ENVIRONMENTAL IMPACT
SIMILAR TO OTHER FOODS**

MEAT AND ENVIRONMENT

THE ENVIRONMENTAL IMPACT OF FOOD HAS TO BE ASSESSED IN AN OVERALL DIET

The growing interest in food sustainability also translates into an increased focus on the environmental impacts generated by food chains along all the stages from the cultivation of raw materials, to the distribution of products to consumers. To report and communicate the impacts, synthetic indicators such as **carbon** and **water footprint** are used, which on the one hand have the advantage of being easy to communicate and understand, but on the other can often lead to misleading results, because the values are communicated without an analysis of the actual local repercussions.

The consumption of a certain amount of water, for example, does not provide information about the **real impact if the value is not put in relation to the availability of water in the area in which the production is actually carried out**.

In general, meats and cured meats are among the foods characterised by major environmental impacts if the analysis is performed considering one kg of product. "Classifying" foods based on their impact per kg is not a significant exercise, both because the **nutritional intake of foods is different**, and because proper nutrition should include a **balanced consumption** of all foods available. Comparing the impact to the frequency of consumption and the **portions suggested by the**

public recommendations, the average weekly impact of the meat is aligned with other foods, for which the **unit impacts are less**, but **the amounts generally consumed are higher**. This concept is well represented by the **Environmental Hourglass**, obtained by multiplying the environmental impact of food for the weekly amount recommended. According to this representation, **eating the correct amount of meat does not significantly increase the environmental impact of an individual**.

Beyond the evaluations of the general context, operators of meat and cured meats production sector are constantly looking for **actions of improvement** towards the efficiency of production processes, and the reduction of environmental impacts.

The **availability of skills and modern technologies**, allows the livestock operators to have a wide choice for the possible actions suitable for the environmental improvement.

Some of the most relevant are the **precision farming practises** as well as the use of manure for the production of **biogas**. Especially the second alternative allows a **double advantage**: beside the reduction of the environmental impacts due to the manure management, a large amount of energy is produced **without using fossil resources**.

In this regard the results of a FAO research are interesting, according to which the European production systems are those characterised by lower **environmental impact per kg of protein**.



THE IMPACT OF MEAT AND CURED MEATS IN A WEEKLY DIET

The impact assessment of 1 kg of food is not really correct: it must be assessed on the real consumptions

Attention towards the environmental impacts of food is more and more widespread, and with it the realisation that food of animal origin have, per kilogram, an impact generally higher than those directly derived from the plant world.

But to classify and compare foods according to **their impact per unit of mass (kg) is not very significant**, both because the nutritional intake of the food is different, and because proper nutrition should provide for a balanced consumption of all the foods available.

It is much more logical, however, to assess the impact in the overall framework of the diet, but to do this, you need to shift the **focus to food portions consumed during a given period of time**, usually a week.

The **Environmental Hourglass** becomes therefore the expression of a broad approach to the vision of diet sustainability, by evaluating the environmental impact of the food that you consume.

CARBON FOOTPRINT
AND WATER FOOTPRINT
OF 1 KG OF FOOD



IMPACT
OF FOOD



SUGGESTIONS FROM
NUTRITIONISTS FOR A
BALANCED DIET



WEEKLY
QUANTITIES SUGGESTED



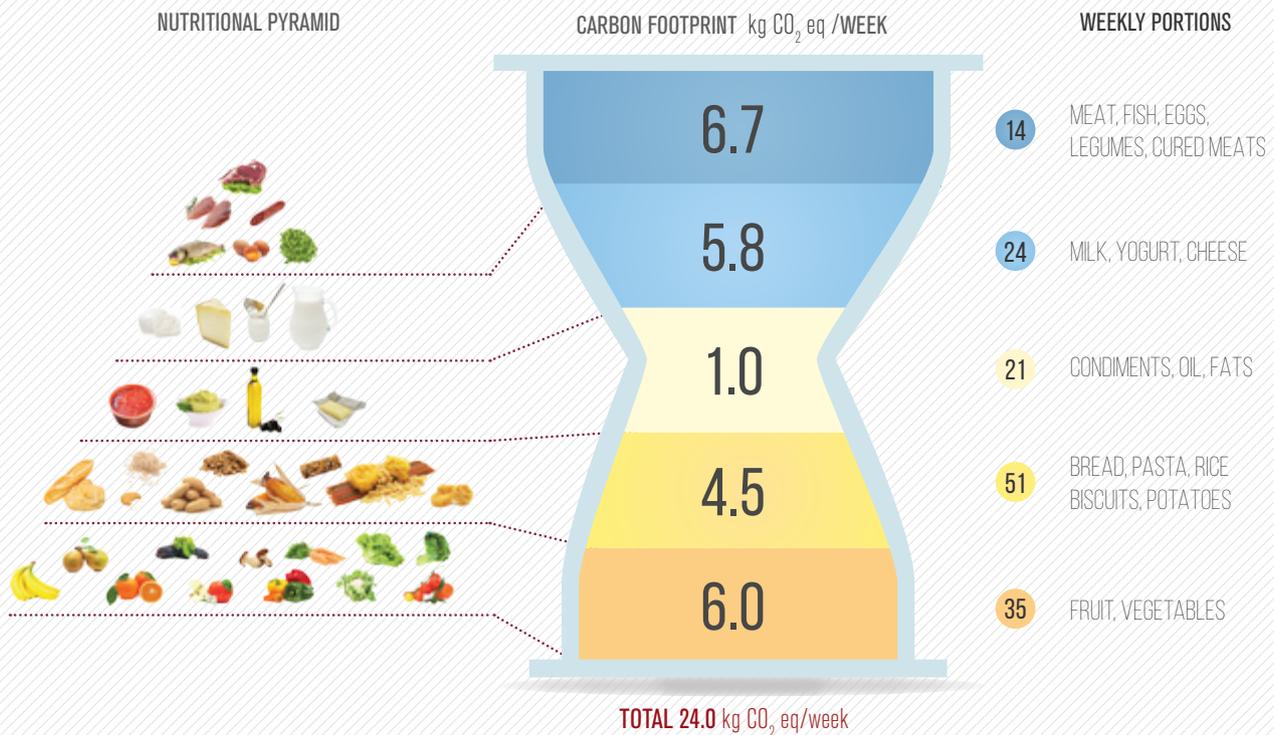
ENVIRONMENTAL
HOURLASS

The data used for the calculations and relevant scenarios are available in the Report at www.carnisostenibili.it/en

THE ENVIRONMENTAL HOURGLASS

The Environmental Hourglass represents the carbon footprint of the food consumed in a week

THE ENVIRONMENTAL HOURGLASS®



The Environmental Hourglass is built considering the consumption frequency suggested by INRAN (now CREA) in the guidelines 2003 for an adult who needs 2,100 kcal per day, and the portions suggested by SINU in the guidelines published in 2012. Further details on www.carnisostenibili.it/en

ANIMALS AND PLANTS: TWO SYSTEMS INTERLOCKED

The integration of agriculture and animal husbandry is at the base of a circular economy

Compared to other industrial sectors, the agri-food one is the most complex because the study of the impacts must always take into account the many **interactions between the different supply chains**.

This is even more true in the case of the production of meat and cured meats where farming and breeding have to be considered: they are two different worlds but closely connected each other. The farms, for example, often use

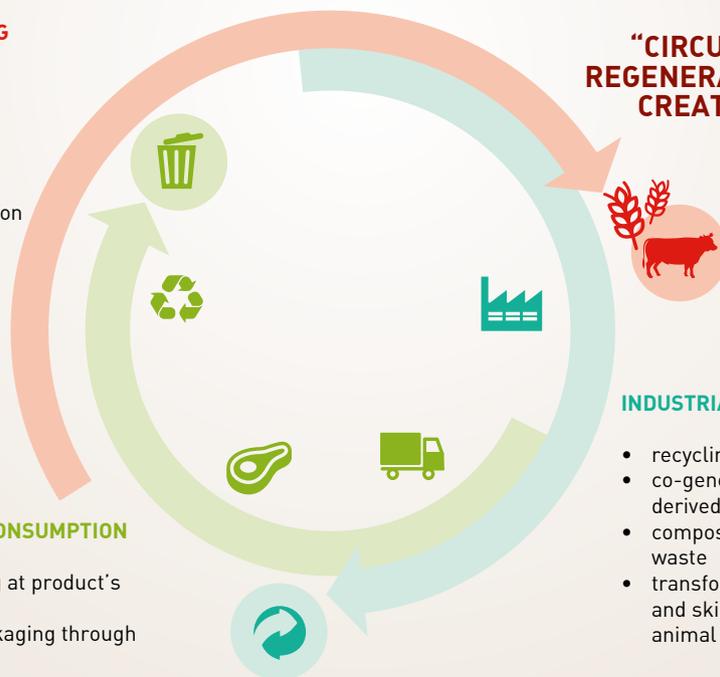
manure as organic fertilizers and today also the production of renewable energy by means on biogas is possible. Beef is for example the result of one of the **most complex systems**, since it must take into account the meat, the milk and the skin: the calculation of the impact of one of them must follow the rules for the division (allocation) of environmental loads between the various systems.

AGRICULTURAL PRODUCTION AND BREEDING

- agricultural waste:
 - compost production
 - co-generation energy
- manure:
 - organic fertiliser production
 - biogas

DISTRIBUTION AND CONSUMPTION

- reducing packaging at product's expiry date
- recyclability of packaging through recycling



**"CIRCULAR ECONOMY"
REGENERATING RESOURCES,
CREATE ZERO WASTE**

INDUSTRIAL PRODUCTION

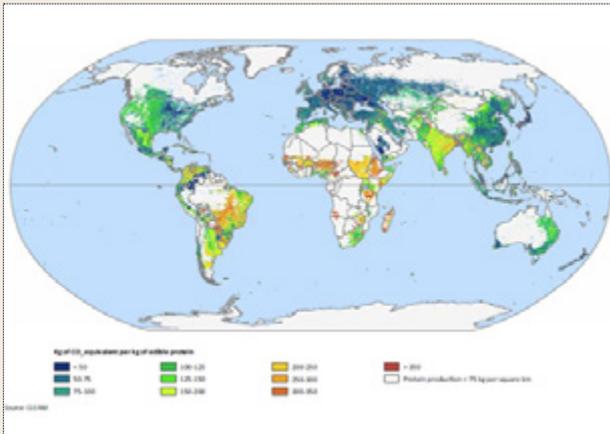
- recycling of industrial waste
- co-generation energy from biomass derived from waste products
- compost production from production waste
- transformation of by-products, bones and skins for food, pharmaceutical, animal feed and fertiliser industries

TO REDUCE IMPACTS SEARCHING FOR EFFICIENCY

Europe is the continent with the most efficient production systems which are also caring to animal welfare

One of the major challenges that humanity will face in the coming years will be to ensure sufficient resources to the entire population. It is estimated that the population will reach 9 billion by 2050; in this context it

is clear that food production will have to become more efficient and **the systems will have to produce more while reducing the resources used and emissions into the environment.**



In this regard, from the interesting Fao's GLEAM project it can be deduced that the **European production systems are among those characterised by a lower environmental impact per kg of protein.**

But sustainability is not just about the environmental aspects. On the contrary, it denotes a balance between the environmental, nutritional, economic and social/ethical objectives. The **European Commission is at the forefront in the regulation of animal welfare** with a system of standards that have been implemented for over 30 years.

Over 2/3 of the environmental impacts of meat occur in farming and breeding



FARMING

76%

FEED CULTIVATION
BREEDING



BREEDING



TRANSFORMATION

17%

TRANSFORMATION
PACKAGING



PRODUCTS



CONSUMPTIONS

7%

DISTRIBUTION
DOMESTIC STORAGE
PACKAGING DISCHARGE

THE COMMITMENT OF LIVESTOCK SECTOR

The livestock sector has many ways to reduce the environmental impacts, especially for the agricultural and breeding phases that have the higher relevance



PRODUCTION OF BIOGAS

Manure, but also many of the organic wastes of the food chains, can be used for **biogas production with a dual benefit**: in addition to the better management of waste, the production of energy from non-fossil sources is obtained. In this way the kWh of electricity has a **70% lower** impact than the Italian national average mix.



SOLAR POWER

The large availability of space (for example on the roofs of the barns) makes it possible to use the sun as a **renewable source of energy** without using up additional territory: there are now many farms that have solar panels to produce electricity or heat.



MANAGING MANURE

Animal manure is a source of impact for both the air (ammonia, methane and nitrous oxide) and for the ground with the release of nitrogen. The methods of storage are very relevant to the reduction of impacts: the transition from the uncovered manure slurry tanks to **closed tanks can halve greenhouse gas emissions**.



PRECISION AGRICULTURE

Use of fertilisers, irrigation and the working of the land, use of crop protection products: **the agricultural phase is one where there are the greatest impacts** of the entire production chain of the meat and cured meats. For this reason, the professionalism of trained farmers who know how to **integrate the experience with technology and modern tools** permits the increase of efficiency and the reduction of impacts.



PROJECT CHANGE-R

A large representation of Italian agri-food sector is involved in a **LIFE project** coordinated by the Region of Emilia Romagna, which aims at the development of farming techniques and efficient farming. Animal husbandry plays an important role in the project for a chance to "**close the cycles**" with all the food companies involved.

More information at <http://agricoltura.regione.emilia-romagna.it/climatechanger/temi/progetto/sintesi-progetto>





THE WATER FOOTPRINT OF MEAT IN ITALY AND IN THE WORLD

The water footprint of meat in Italy is lower than the world average

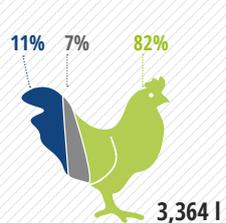
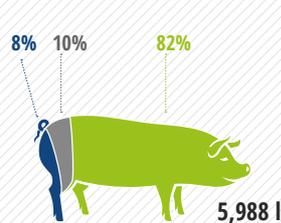
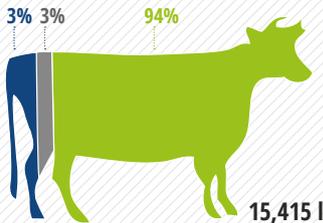
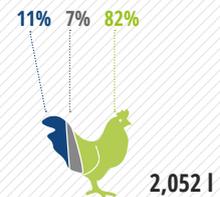
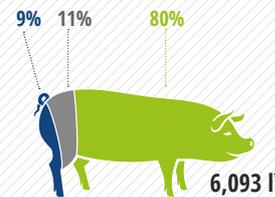
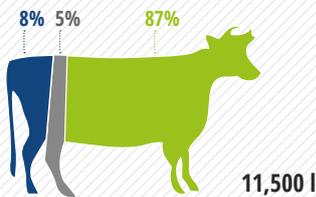


The **water footprint** is the sum of three contributions partly real and partly virtual: transpiration water from plants used to live (**green water**), the water actually used by processes or to irrigate fields (**blue water**) and the water virtually needed to dilute and purify the waste water (**grey water**).

For meat and cured meats the component of green water is by far the most significant of the three, coming to constitute almost the totality of the impact and demonstrating how the actually consumed value is **much lower** than the common figure.

DATA litre/kg

GREEN WATER BLUE WATER GREY WATER



*The figure refers to heavy pigs (160 kg, 9.11 months of age) while the most common pigs abroad weigh 80/100 kg (7.5 months)

Mekonnen, M. M., Hoekstra, A.Y. The Green, Blue and Grey Water Footprint of Farm Animals and Animal Products. Value of Water Research Report Series no.48, UNESCO-IHE, Delft, the Netherlands, 2010



**MEAT AND CURED
MEATS ARE COMPLETELY
TRACEABLE,
A GUARANTEE OF THEIR
ORIGIN AND QUALITY**

**THE ITALIAN HEALTH CARE
SYSTEM IS ONE OF THE
MOST STRUCTURED IN
THE WORLD HAVING 4,500
OFFICIAL VETERINARIANS**

**ANIMAL WELFARE IS
IMPORTANT FOR ETHICAL
REASONS, BUT ALSO TO
ENSURE THE DEFENCE
OF FOOD SECURITY AND
IMPROVE MEAT QUALITY**

FOOD SAFETY AND ANIMAL WELFARE

EUROPE HAS THE MOST STRICT LAW RELATED TO THE ANIMAL WELFARE THAN THE REST OF THE WORLD

When it comes to the safety of meat (and food in general), one often refers to a series of aspects, complex and integrated with each other, which may have an impact on people's health.

A first point to clarify is the fundamental difference between the **effects of the contamination** of food on people's health that can be **certain or assumed**. The precautionary measures taken in relation to the alleged risks are sometimes misinterpreted as management of cases of real danger, creating unjustified alarmism.

A second element is the use of drugs on farms which have to be divided among those prohibited and those regulated by national and international protocols, more or less severe. This observation is useful to eliminate **some false stereotypes**, such as those relating systematic use of **hormones in livestock, banned throughout Europe**.

The use of **antibiotics** in animal husbandry falls under the practices subject to very strict rules and controlled by the Health Authorities: these substances can in fact be used only for **animal care** through medical treatments prescribed by veterinarians. Their use should be limited in time and in no instance can the meat of animals treated be placed under any circumstances for consumption without having respected the

"suspension period", which guarantees the absence of residues in meat.

The quality and food safety, in Italy as well as throughout the European Union, are not only an EU regulatory stronghold, but the real fundamental element of the Community consumer protection policy. The European Employment Strategy provides for the **prevention of any risk to food safety throughout the production chain** and is based on the so-called **"One Health"**: an integrated approach which considers as **essential the link between animal health, the health of products derived from them and human health**, to guarantee the latter a high level of quality of life while protecting the health and welfare of animals.

The effectiveness of controls is further enhanced by **traceability**, which allows the tracing and following of a food from the consumer to the primary agricultural production. **The Italian health care system is one of the most structured worldwide**, recognised in Europe as a example of excellence thanks to the approximately 4,500 official veterinaries involved in numerous tests and analysis in the field of safety and meat quality.

The issue of security is closely linked to **animal welfare**. Maintaining a state of good physical and mental health in ani-

mals is a prerequisite to ensure their sustainable livelihoods, but it is also a crucial element in ensuring the safety and the quality of foods derived from them. The evolution of public awareness has meant that since the 80s this issue has been widely covered by EU and national legislation, comprehensively monitored by the legislation that lays down the minimum wellbeing conditions to be met, and **in many cases a violation of these rules is considered in Italy a criminal offense**.



FUNDAMENTALS OF ANIMAL WELLNESS: THE FIVE FREEDOMS

In Italy animal abuse is a criminal offense

Animal welfare is one of the aspects that attract the most attention when it comes to talking about the sustainability of meats and cured meats. In reality, since 1965, the year of publication of the first scientific paper on the subject (the Brambell report), the principles of the “**five freedoms**” were born to protect the welfare of income animals.

These guidelines are still the basis of **international legislation** on animal welfare recalling the respect for the basic and primary needs of every animal, whose protection is essential especially in captive conditions.

Despite this, the debate on the issue has yet to find a unequivocal definition. Most experts agree to viewing animal welfare as a **balance between the individual and the environment** that surrounds it, where “environment” refers to a heterogeneous group of factors including the physical environment, the interaction with other animals and humans, the **absence of disease or predators**. It may therefore be that these values are guaranteed better in a farm that is run in respect of the principles, rather than a poorly controlled grazing.

To try and pass to an ever **more objective vision**, in recent years several projects were launched to **measure** the level of animal welfare, based on tangible indicators that reflect the psychophysical health status and the level of stress of the animal.

THE FIVE FREEDOMS



1. FROM HUNGER, THIRST AND MALNUTRITION

by ensuring to the animal access to fresh water and a diet that maintains full health



2. TO HAVE AN PROPER PHYSICAL ENVIRONMENT

giving the animal an environment including shelter and a comfortable resting area



3. FROM PAIN, INJURY, DISEASE

foreseeing them or diagnosing and treating them quickly



4. TO EXPRESS THEIR SPECIFIC BEHAVIOURAL CHARACTERISTICS

of their species providing the animal with sufficient space, proper facilities and the company of animals of their own species



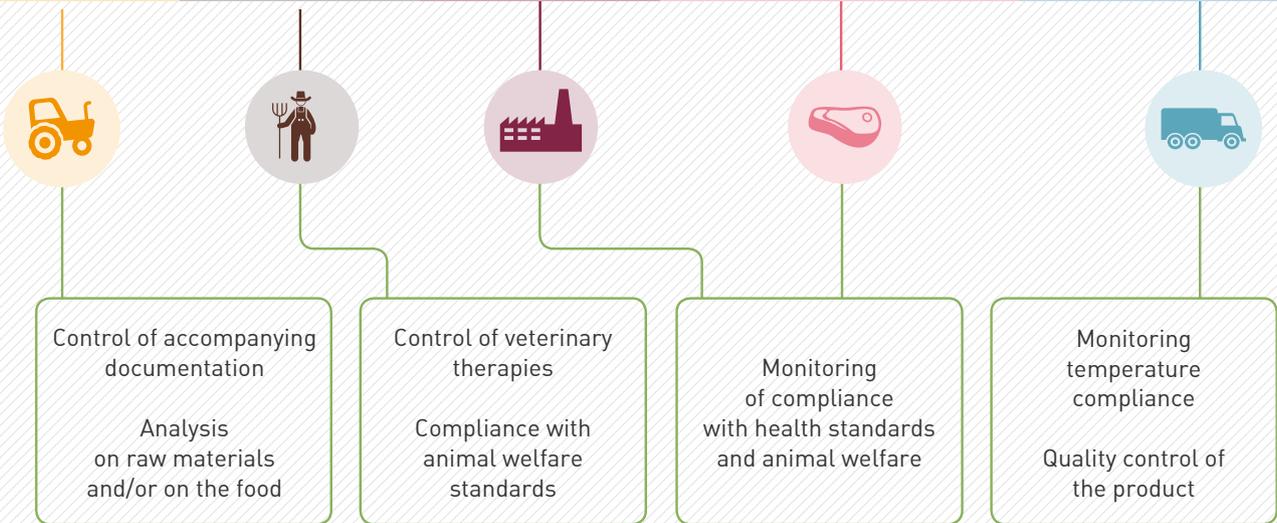
5. FROM FEAR AND DISTRESS

ensuring the animal conditions and care that do not involve psychological suffering



MEAT TRACEABILITY: MAIN CONTROLS CARRIED OUT

The controls
"from farm to fork"



TRACEABILITY





THE MEAT CHAIN
CONTRIBUTES TO ABOUT
15% OF THE ECONOMIC
PROFIT OF THE ITALIAN
FOOD INDUSTRIES

THE ORGANISATION
OF AGRICULTURAL WORKERS
IS CRITICAL
TO THEIR ECONOMIC
SUSTAINABILITY IN THE
MEDIUM AND LONG-TERM

WHEN MEAT IS PLACED IN
A BALANCED DIET IT DOES
NOT INVOLVE EXCESSIVE
COSTS FOR THE CONSUMER

ECONOMIC AND SOCIAL ASPECTS OF MEAT CONSUMPTION

THE IMPORTANCE OF FARMS FOR TRADE BALANCE AND LAND PROTECTION

The meat sector in Italy generates an economic value in the order of **30 billion Euro** a year compared to about 180 of the entire food sector and the 1,500 of the Italian GDP.

While the three main sectors (poultry, cattle and pig) divide approximately equally amongst themselves the total economic value, the differences lie in the analysis of the **trade balance**: the beef industry imports about 40% of total requirements, the poultry industry is almost neutral, the cured meats chain is characterised mainly by exports of finished products and the import of pork.

To this we must add the great economic value, especially in terms of exports of Italian quality product brands. In fact, Italy holds the European record for the numbers of **DOP and IGP** awards, with more than 261 recognised quality products. Among these, the first 4 DOP for volume produced and export quotas belong to the **husbandry sector**: Parma ham, San Daniele ham, Grana Padano, Parmigiano Reggiano.

The productive reality of Italian farms is **highly composite, characterised by the coexistence on the land of multiple types of products**, behind which lies a complex and varied system closely

linked to the rural dimension.

This fragmentation makes it difficult for the economic sustainability of the farms with the **risk of the abandonment of land** by farmers and their families. For this reason the tendency to organise themselves in cooperatives or in small and large industries, **must be seen in a positive way** because the objective is to ensure economic sustainability while maintaining the original identity. This trend, highly developed in countries that make agriculture a richness, allows the organisation of supply chains for a better control of the products.

A key aspect of an “organised” system is the ability to better integrate the various related production systems (meat, milk, cereals) maximising production efficiencies.

Similarly to what was done for environmental aspects, the economic aspect from a consumer point of view has been considered.

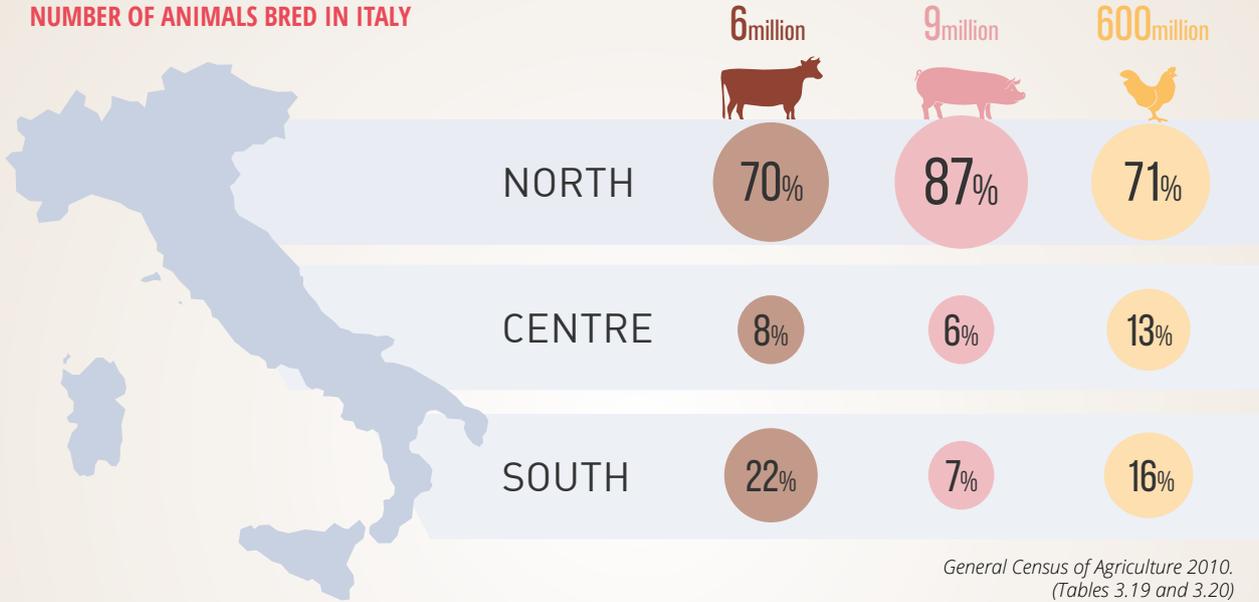
Basically, **following a balanced diet, including all food in the right quantities, is advantageous not only from a nutritional point of view but also for the environment and the consumer's wallet.**



LIVESTOCK IN ITALY

Most livestock farms are located in Northern Italy, where more resources for the agriculture are available

NUMBER OF ANIMALS BRED IN ITALY



NUMBER OF EMPLOYEES IN ITALY



BEEF



PORK AND CURED MEATS



POULTRY



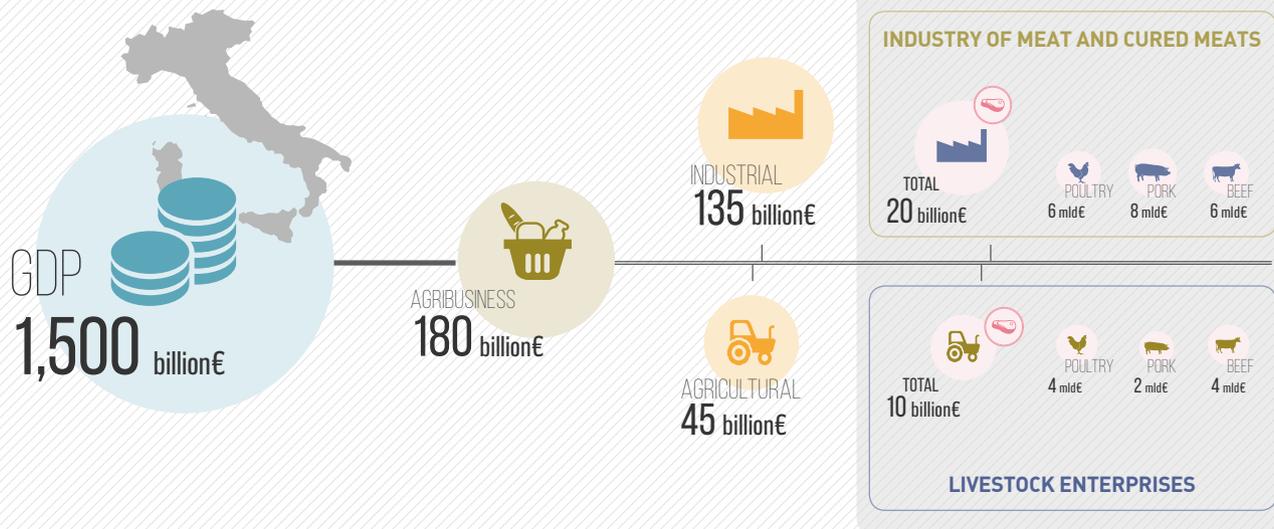
THE MEAT SECTOR

Meat and cured meats produce a turnover of about 30 billion Euro per year

The agri-food sector in Italy contributes to about 10-15% of the annual gross domestic product, with a total value of about **180 billion Euro**.

The three main sectors (beef, poultry and pork) generate a turnover of around **30 billion Euro per year, resulting mainly from agricultural sector and the processing industry**. The presented data can be integrated with the specific information contained in the technical reports.

DATA IN BILLION € PER YEAR



The information submitted have the purpose of supplying a maximum indication and are the reworking of statistical data published by ISMEA* and ISTAT** that should be consulted for further study or detailed information.

* www.ismeaservizi.it **www.agri.istat.it



**IT IS APPROPRIATE TO
INTRODUCE THE CONCEPT
OF SOCIAL VALUE TO
IDENTIFY CORRECTLY
FOOD WASTE**

**THE MEAT SECTOR IS
AMONG THE MOST
VIRTUOUS AND ONE OF
THOSE WHICH PRODUCE
THE LEAST WASTE**

**CONSUMER AWARENESS
IS CRITICAL FOR
LIMITING WASTE IN THE
CONSUMPTION PHASE**



FOOD WASTE

THE MEAT INDUSTRY IS THE MOST VIRTUOUS IN WASTE REDUCTION

The total amount of food produced worldwide each year amounted to **about 4 billion tonnes**, of which an estimated 30%, is lost before consumption. When the weight of the food waste is converted into calories, global food loss reaches **24% of the total production**.

The causes of waste can be found in a combination of effects, which belong both to the world of production, and to that of consumption: from the analysis of the causes, several initiatives aimed at reducing waste were born, with **particular attention to people's education**.

Without losing sight on the ultimate goal of reducing waste, an in-depth analysis of the available information makes it clear that we should avoid trivial errors, such as that of including in the waste both the actually wasted food and the inevitable non edible waste.

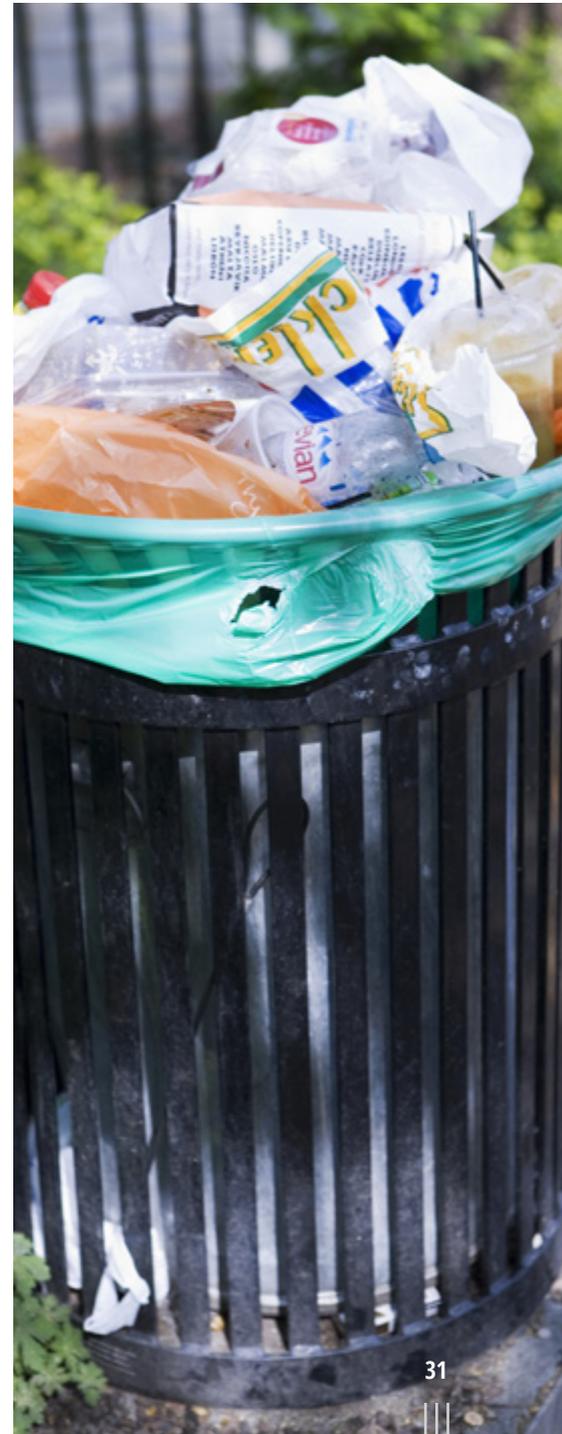
A correct interpretation of the concept of waste and its data should take into account the social value of food, separating what is recovered for purposes of human consumption from what instead is recovered as a resource. In order to try to shed light on these aspects, the data available in the publication "**Feed the hungry**" of the Polytechnic of Milan and the Foundation for Subsidiarity in Italy was analysed,

being considered among the most up to date from a scientific point of view.

The agri-food chain is divided into several stages which include agricultural and/or industrial operations characterised by different degrees of efficiency and types of losses and waste. Starting with the losses of the primary sector and the food processing industry, it continues with waste that occurs during distribution, both in collective and commercial catering, up to those of domestic consumption.

The elaboration of the available data shows how the meat sector is amongst those **less subject to the phenomenon of waste, both from the production side and from that of consumption**. Despite the inherently degradable nature of the marketed product, in fact, meat is the sector with the least social waste.

The reasons for this virtuosity are due to the structure and organisation of the supply chain, which allows the processing of by-products in secondary processes, but also the **economic, cultural and social value** attributed by consumers to these foods.



WHY AND HOW WASTE IS GENERATED

Meat and cured meats are amongst the foods that waste less



PRIMARY SECTOR

Includes the phases of growing food and live-stock.

In the agricultural phase the greatest losses are caused by the weather or by plant diseases, which cause deviations from the standards required by the market.



PROCESSING

The first and second transformations lead to the creation of food

products ready to be placed on the market.

During these phases, the losses are caused mainly by the failure of the product to meet quality requirements and products rendered by the market.



DISTRIBUTION

The third stage is connected to food distribution, either

wholesale or retail.

In this context, much of the waste is due to food remained unsold for reasons related to the quality or consumer preferences.



CATERING

One of the methods of final consumption is represented by the catering sector

(collective or commercial) which is becoming increasingly important, given the growing number of meals eaten outside the home.

The waste generated in this phase is due to the non-consumption of the prepared food.



FINAL CONSUMER

In the phase of domestic consumption wastes are mainly due to the

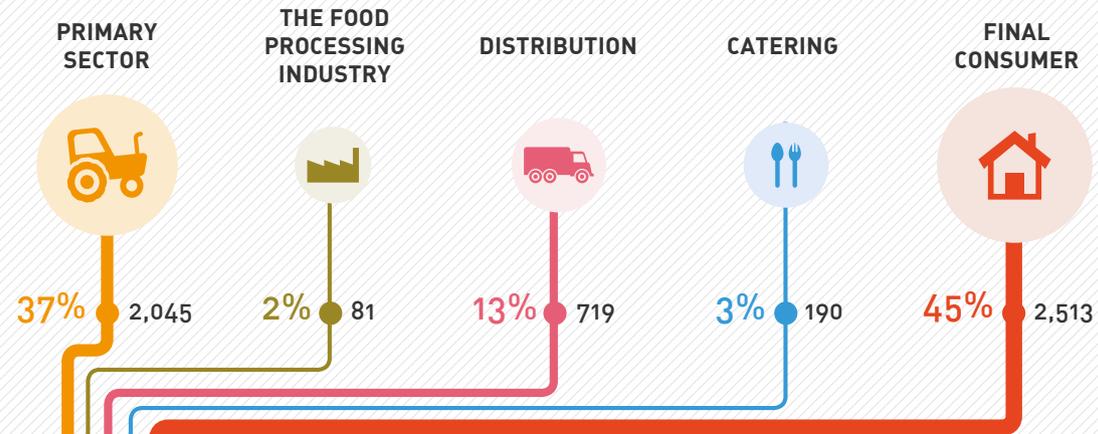
overabundance of food bought, inability to consume within the expiry-date or proper food conservation.

“ THE FOOD CHAIN IS DIVIDED INTO SEVERAL STAGES WHICH INCLUDE AGRICULTURAL AND INDUSTRIAL OPERATIONS CHARACTERISED BY DIFFERENT TYPES OF LOSSES AND WASTE. ”



WHO WASTES MORE?

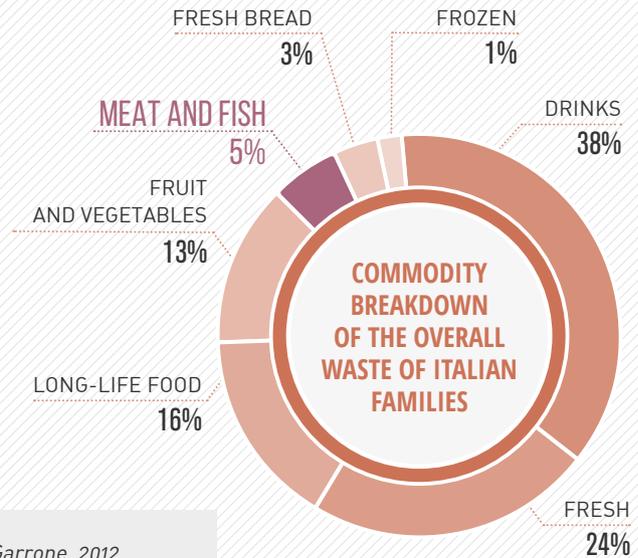
The final consumption is the phase in which wastes are higher



DATAS IN MILLION OF TONS



THE SURPLUS OF FOOD IN ITALY IS ESTIMATED AT ABOUT 5.5 MILLION TONNES PER YEAR



Source: processing of data relating to Italy and available on Garrone, 2012



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Published in June 2016



Since 2012, a group of livestock sector operators organised themselves to support scientific studies that has brought about, in a pre-competitive logic of transparency, the **"Sustainable Meat" Project**, which with its portal www.carnisostenibili.it/en, as well as many other initiatives, has sought to discuss across the board all matters related to the world of sustainability of meat and cured meats in Italy.

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