



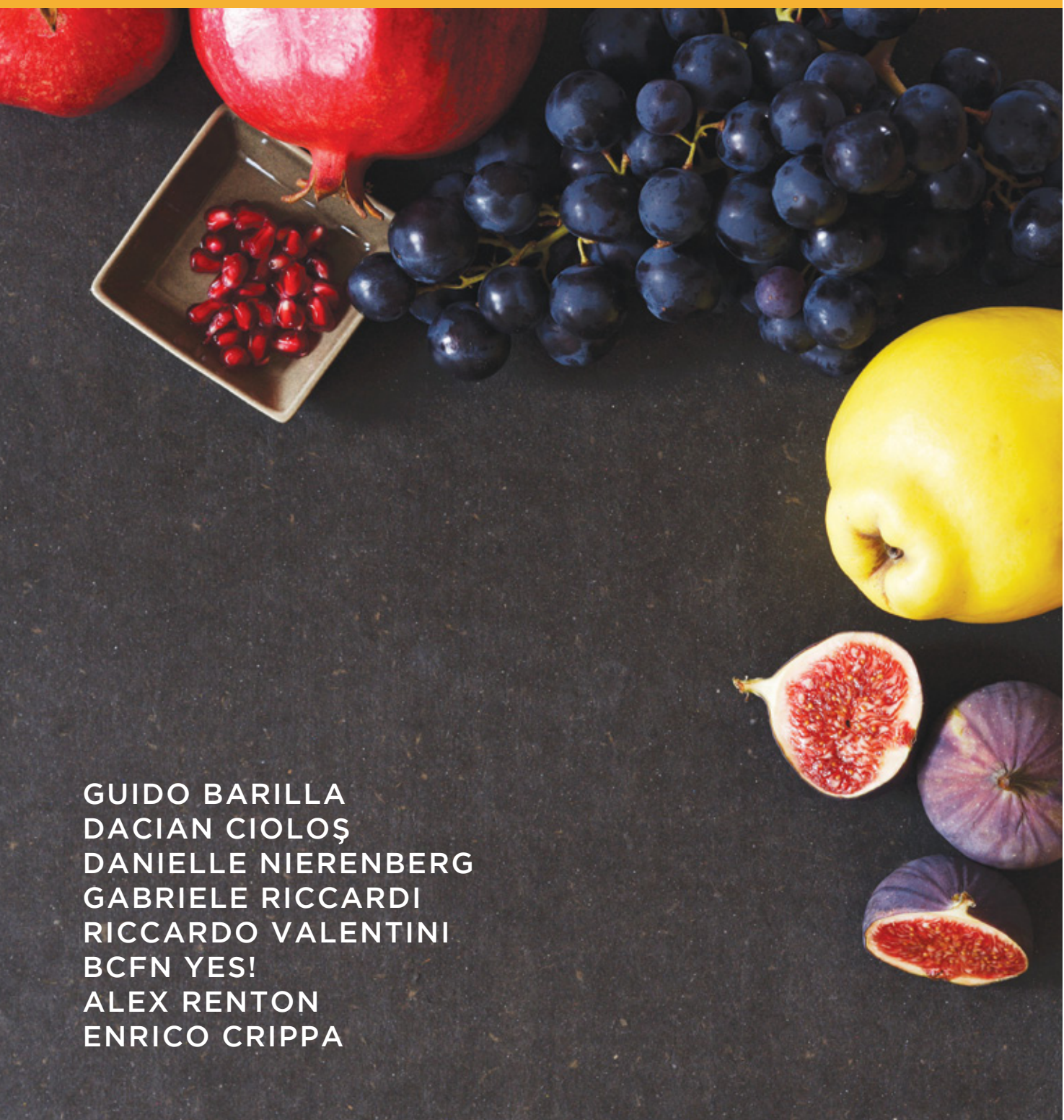
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FOOD AND THE ENVIRONMENT

DIETS THAT ARE HEALTHY FOR PEOPLE AND FOR THE PLANET



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The contemporary world is experiencing a major food emergency. The food we choose to eat, its production chain, the ways and places in which we consume it, and its inequitable distribution in different parts of the planet have a profound effect on the mechanisms that govern our society and our times.

In recent years, it has become necessary to compare the different points of view of the actors involved along the food chain, from the field to the table. Ever since its creation in 2009, the Barilla Center for Food and Nutrition has established itself as a privileged platform for this choral dialog and for a wide range of issues about food and nutrition. The BCFN's aim is to become a collector and connector between the different voices, offer-

ing solutions and proposals, and putting science and research in communication with policy decisions and governmental actions.

The BCFN is dedicating an area of study and research to every crucial issue related to food and nutrition, to address current and future challenges: from the problem of access to food and its distribution in the world (*Food for All*) to the re-balancing of the unstable relationship between food and health through healthy lifestyles (*Food for Health*), from reflection on the food chain and assessing the impact of production on the environment (*Food for Sustainable Growth*) to the history of the relationship between man and food, in order to find some good solutions for the present (*Food for Culture*).

FOOD AND THE ENVIRONMENT

DIETS THAT ARE HEALTHY FOR PEOPLE AND FOR THE PLANET

For a planet whose resources are being gradually exhausted and where the spread of diseases related to poor nutrition is increasing, it is essential to find a way of living and eating that promotes human and environmental welfare.

For this reason, in the third issue of its magazine, the Barilla Center for Food & Nutrition suggests a possible path. This is the model of the Double Pyramid of Food and the Environment – developed four years ago and further updated here – which, analyzing the foods recommended for human health and their environmental impacts, confirms the possibility of choosing a sustainable diet, “good” for us and for the planet.

And many people in Europe and around the world are moving in this direction, as Dacian Cioleş (EU), Danielle Nierenberg, and Eve Andrews tell us; in science, industry and trade, whose difficult framework is described by the journalist Alex Renton; in the world of restaurants and supermarkets, as can be seen in the experiences of The People’s Supermarket, and the Michelin-starred chef, Enrico Crippa – who offers a rich menu of vegetables that he grows himself; or from the researchs of the Eurobarometer on personal habits. The BCFN’s recommendations and the innovative ideas of the finalists of BCFN YES! suggest small daily practices that are possible. Here is a complete picture for learning to live and eat with respect to the environment and our health.

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A COMMITMENT FOR OUR OWN FUTURE AND THE FUTURE OF THE PLANET

by **GUIDO BARILLA**

President of the Barilla Center for Food & Nutrition

When the BCFN began its path in 2009, the issue of the environmental impact of what we eat was a new topic. Few people were aware that our menu has a far from negligible effect on climate change: just think of the greenhouse gases generated along the food chain or the consumption of water used during food production. Four years ago, the BCFN paper *Climate Change, Agriculture, and Food* introduced the topic, also sharing the good news that no special sacrifices are required in order to be sustainable at the supper table. In fact, all the available data shows the existence of an inverse relationship between the types of foods to be eaten more frequently and their environmental impact. For the first time, the classic food pyramid, which ranks foods by placing those to be consumed in moderation toward the top, and at the base, the ones for which a more frequent consumption is advised (fruits, vegetables, and grains), was complemented by an upside down pyramid, where the same foods were placed in relation to their effects on the planet. It was found that the foods that should be consumed in moderation are those that have a greater impact (for example, in terms of carbon dioxide or water consumption), and vice versa. In subsequent years, the evidence that correct dietary models, particularly the Mediterranean diet, are also the most sustainable, has received confirmation from many other studies which have been gradually added to the scientific sources used

by the BCFN to elaborate the subsequent editions of the Double Pyramid. By now, the slogan “healthy for you, sustainable for the planet” has become a rule that also inspires our way of doing business as a company (the also called good for you, good for the planet strategy).

Unfortunately, this does not mean that the problem is being resolved: the impact of food on our planet is still out of control, both because the development of sustainable food models has not yet entered into force with international institutional agendas, and because people’s increased awareness is not always matched by a real improvement in their behavior. Thus, today, supporting the widespread adoption of sustainable eating habits is the way to drastically reduce our impact on the planet, while promoting an improvement in our health.

That is why, in addition to continuing the constant gathering of further evidence on the subject of sustainable diet, the BCFN is expanding its commitment and studying the best channels for promoting proper behavior at the table.

Now that the orientation to be adopted is clear, the commitment that each of us must put into act remains, with the knowledge that the time has come to take action to secure a future for mankind and the planet that hosts us.

Guido Barilla

THE SUSTAINABILITY OF EUROPEAN AGRICULTURE

by **DACIAN CIOLOȘ**

European Commissioner for Agriculture and Rural Development

European agriculture and food production has made enormous progress in recent decades. Productivity has grown and yields for most products are as good as anywhere in the world. This will probably not surprise you. However, did you know that in the EU, 45% of our soil and 40% of our water resources are threatened? In short, our successful productivity gains of these decades have put a strain on our natural resources, and if we do not pay attention, we risk not only losing some of our biodiversity and natural habitats, but also reducing our overall food production capacity.

With food demand forecast to grow significantly in the years ahead, it is clear that we must not only be able to produce more, but we must also produce better, in a way that respects a complex and highly unavoidable challenge – namely, sustainability. Producers in Europe must not only be economically competitive, but ecologically competitive as well.

Since the benefits of sustainable agricultural production have not yet been incorporated into economic modeling (considerations that are so long-term that they are not even remunerated by the market), and since the market also fails to remunerate the sustainable management of our rural areas by European farmers, farm policy is the most obvious route to ensure that sustainability considerations are incorporated into food security equations. Indeed, the problem of su-

stainability was one of the major concerns raised by EU citizens in a public debate we held in 2010, just as we started our discussions on the shape of the EU. This is why the latest reform of the CAP, on which political agreement was reached at the end of June, has made “Greening” a central part of common agricultural policy in the period from 2014 to 2020. In the future, we will see 100 billion Euros dedicated by the CAP to sustainability: 30% of the direct payments which farmers receive from EU taxpayers will be directly linked to the provision of certain ecosystem services and sustainable agricultural practices; a further 30% of Rural Development payments will also be dedicated to agri-environment and climate change-related programs.

There are other elements of the package which address sustainability issues. Many of them are through options available under Rural Development programs. However, I would also like to mention our European Innovation Partnerships, whose aim is to bring researchers and farmers closer together – and to accelerate the technological transfer from the laboratory to the field. All in all, I am pleased to underline that this reform of the CAP has embraced one of the most important concerns of European citizens: the sustainability challenge. With this new CAP, it is even more obvious that common agricultural policy is not just for farmers, it also provides wider benefits to all of society.



VOTE WITH YOUR FORK

Although we have known for some time that what we decide to eat every day has consequences on our health, it is only recently that experts officially recognize the influence of food, and how it is produced, on environmental health. International experts tell us about the foods for a healthy diet and sustainable, and simply and intuitively, about the nutritional model of the Double Pyramid, promoted by the BCFN.

edited by **MICHELE FOSSI**



In 2008, when asked what he was doing on a daily basis to reduce his carbon footprint, Dr. Rajendra Pachauri, head of the United Nations for Climate Science panel, answered by talking about food. This scientist, considered one of the greatest experts in the world on climate change, did not mention the need to limit the number of trips by car or plane, or to replace light bulbs and appliances at home with similar ones with low energy consumption. To the amazement of many, he replied, “Try food. The food is very polluting in terms of climate change, due to they are associated with large amounts of greenhouse gas emissions associated with it. Eat less!” And he added, “The studies in our possession show that people who want to make their own contribution in the fight against climate change usually concentrate their efforts on reducing emissions in the transport sector, often ignoring that appropriately changing their eating habits could reduce their emissions to an even greater extent.” Although climate issues have been at the center of political debate and the world of the media for many years, the relationship between food and the environment, and in particular, between food and climate, has long been marginal to the discussion, to the extent that, just five years ago, Dr. Pachauri’s words, taken for granted today by many of us, stirred up immense media interest, ending up in newspapers around the world the next day. The good news is that the foods that have major impacts on the environment are also the food we should eat less, because they are not well suited for a healthy life.

Today, thanks to numerous studies on the subject, we know with certainty that the Western diet, rich in meat, dairy products, and animal fats, with a preponderance of processed foods, high in sugar and low in nutrients (and for some years now dangerously “fashionable” even in large developing countries like India and China, where the rise of the middle class has been accompanied by the gradual abandonment of a frugal but healthy traditional diet based on rice and vegetables), which is the basis of many modern diseases, and also constitutes a real scourge for the

climate. According to FAO, the livestock sector alone is responsible for 18% of the planet’s emissions, producing more pollution than transportation does, not to mention its considerable effects on ecosystems, being a major cause of the degradation of soil and water resources.

To quote the words of Michael Pollan, the author of *The Omnivore’s Dilemma*, “Eating is a political act.” What we put on our plate is a political act: starting with the individual food choices of our daily lives, each of us can have a positive effect or negative effect on our own health and on the environment at the same time.

This, in brief, is also the message conveyed by the Food and Environment Double Pyramid, a graphic model proposed for the first time by the Barilla Center for Food & Nutrition in June 2010 (and now in its fourth edition), obtained by comparing dozens of international scientific studies dedicated to the subject.

With the graphic immediacy of an inverted double pyramid, it reminds us that there is a strong link between healthy eating and sustainable food: in fact, a balanced proper diet like the Mediterranean diet, based on pasta and other cereals, vegetables, fruits, and olive oil, which is known to contribute to better health and

well-being, causes an environmental impact 60% lower than the North American type of diet, favoring animal products over vegetables and grains. It should not be too surprising that the health of human beings is linked hand in glove with that of ecosystems, and that the categories of foods that are the most beneficial to health are also those that have a lower impact on the environment. In fact, the current epidemic of chronic diseases related to an incorrect diet (cancer, cardio-respiratory system disorders, diabetes) and the so-called “diseases of the planet,” such as global warming, the disappearance of fish from the sea, and the poisoning of the water and the earth, have a common denominator: the spreading, especially since the Fifties, of the high rate of industrialization in the production methods of food, closely followed by the widespread adoption of diets that are not sustainable, and which are overly rich in animal protein and processed products. “I owe it

-60%
.....
is the environmental
impact of the
Mediterranean diet
compared to the one
of the North America



to the movies that I have become the food activist I am,” Alice Waters, the California chef and activist, and Vice President of Slow Food International, revealed to me one day during an interview. “Some memorable films from the Thirties, such as *Our Daily Bread* by King Vidor, or *\$1000 a Touchdown*, by James P. Hogan, have the merit of opening my eyes to the contradictions of American food, projecting me into a rural America of the past, where our gastronomy has its roots, and which not so long ago was full of healthy grains, vegetables, and fresh seasonal fruit, and was less focused on the consumption of processed foods.

declared an Intangible Cultural Heritage Site by UNESCO and universally recognized as the optimal regimen for healthy eating. And yet nobody really knows what it is. Let alone in Italy, given that it is practiced by only 10% of Italians.” If the Mediterranean diet, is therefore essentially an unknown for 90% of our countrymen, the challenge of health and sustainability at the table, translated into daily life, means first of all undertaking an exciting and rewarding path to return to the origins of our culinary tradition. In particular, it means discovering the delicious “poor” Mediterranean cuisine typical of our country,



These films led me to reflect on our inexorable decline. ‘What has happened to us?’ I asked myself one day. How could we have lost ourselves like that?” Those who delude themselves that in Italy, considered the birthplace of the Mediterranean diet, the situation is much more rosy, are wrong. Professor Antonino De Lorenzo, Director of the School of Specialization in Food Science at the University of Rome Tor Vergata and one of the most important scholars of the Mediterranean diet and nutrition, said recently: “The Mediterranean diet is the most famous diet in the world,

which has never had a systematic coding, and which does not appear in the “sacred texts” of Italian cuisine (except for some allusions, where it exists alongside its noble kinsman, the typical regional cuisine). The dishes we come across, when we purchase one of the many lovely cookbooks dedicated to the subject, or better yet, when hunting for recipes directly from the childhood memories of our elders, are in fact, in spite of their frugality, perfect gastronomic translations of the principles of the Double Pyramid. Namely, dishes that naturally follow the rhythm of the seasons, based



The Mediterranean diet, which is universally recognized as the optimal regimen to promote health, is followed by only 10% of Italians

on healthy and organic ingredients available in the area, such as “buckwheat and chestnut soup,” “pasta with beans,” “pasta with chickpeas,” “rice with peas,” “barley with bacon, potatoes, and beans,” and so on.

These are all dishes that are balanced and complete in nutritional terms, which provide energy without being heavy.

They offer in a tasty form that combination of “legumes and carbohydrates” so dear to our ancestors, and that today science tells us can guarantee a supply of amino acids that is complete with respect to animal protein, without excessively impacting the environment and, what is more, even saving money.

Without wishing to idealize a rural past when poverty, truly extreme, often led to an excessively monotonous diet, rendering it anything but healthy, especially with regard to the sources of carbohydrates (just think of the spreading of pellagra in the Po Valley caused by an excessive consumption of polenta), there is no doubt that the workers of the earth, by following a diet low in meat, thus ensured themselves a better state of health and a longer old age than the rich, who, paradoxically, were envied for their tables laden with beef and game (and which we now know to be the origin of “royal rot,” or tumors – called

this way since the Middle Ages because it was aimed exclusively at the royal families and the narrow circle of aristocrats, the only people able to follow a diet rich in animal protein).

Many of these simple recipes, born in a world where few could afford the luxury of wasting food, nonetheless provide great ideas for us to recycle stale bread and other waste. Recipes such as *pappa al pomodoro*, *panzanella*, or balls of bread and potatoes help us remember that defending the environment at the table also means limiting food waste, an odious practice that leads us to throw €15 billion worth of food in the trash every year and which corresponds to the release of as many as 4 million tons of CO₂, equivalent to the energy needed to supply the energy consumption of the Italian population for a year. In this regard, we recommend to everyone the beautiful nineteenth-century text *The Art of Using Canteen Leftovers* by Olindo Guerrini: in an ironic mockery of the famous cookbook *The Art of Eating Well* by Artusi, the author proposes a series of creative dishes made with leftover and “poor” ingredients.

In the current climatic impasse and the spreading of chronic diseases from food, it is more urgent than ever to rediscover these recipes, if only because they are all invariably very tasty.

THE WORLD IN SEARCH OF EQUILIBRIUM

Institutions around the world have developed – or are developing – guidelines to help people choose their own diet. Because spreading the awareness that what we choose to put on our plate has a global impact on humans and the ecosystem requires taking practical steps that are appropriate to each country

by **DANIELLE NIERENBERG** and **EVE ANDREWS**

Imagine what would happen if we were to choose the food we eat by taking not only its nutritional value and flavor into account, but also its environmental sustainability. The good news is that these issues are inter-related: the healthiest and most nutritious foods are also those that tend to have a less negative impact on the planet's resources.

Take a diet with an excessive consumption of meat, for example: it is rich in fat and cholesterol, and may be responsible for problems of obesity, diabetes, and cardiovascular disorders. And it is a diet that has serious repercussions on the environment, as demonstrated by the studies done by the Barilla Center for Food & Nutrition (BCFN), because to produce just one kilo of meat, 15,400 liters of water are required. This is a type of production that needs to be questioned in a world where resources are running low.

Earth's plant biodiversity is in danger – 75 percent of the planet's genetic resources are extinct, while another third of what is left is expected to disappear by 2050. Eating a wide variety of fru-

its and vegetables, however, can be beneficial for both human health and the health of the environment. Eating indigenous fruits, vegetables, grains, and legumes can enhance the soil, protect water supplies, and protect biodiversity.

There are organizations and initiatives around the world that are making the connection between health and environmental sustainability by helping eaters choose healthy, safe, and low-impact foods.

The BCFN, for example, helps eaters realize the impact of their food choices through the organization's own Double Food Pyramid. The Pyramid helps consumers eat a healthy diet while also choosing foods that are environmentally sustainable by highlighting how foods that should be consumed more frequently are also the foods with the lowest environmental impact. And the foods that consumers should eat less, such as red meat and processed foods, have the biggest impact on the environment. Eating well, according to the BCFN, is not only good for personal health, but also for the health of the planet.



The eatwell plate

Use the eatwell plate to help you get the balance right. It shows how much of what you eat should come from each food group.



In 2009, the United Kingdom Sustainable Development Commission published a report finding that the dietary changes with the most significant benefits to both health and the environment involved reducing intake of meat and dairy, and also cutting down heavily on foods high in fat and sugar.

Accordingly, the Food Standards Agency of the United Kingdom designed the Eatwell Plate, which is divided into five sections to illustrate a balanced diet.

The largest sections are fruits, vegetables, and grains. Meat, fish, eggs, beans, milk, dairy, and foods high in fat or sugar are recommended in smaller portions.

And all over the world, national food guidelines are encouraging the development of diets with heavier consumption of foods with small ecological impact, and less of those that contribute to environmental degradation. Poland's food pyramid uses photos to show consu-

mers what they should eat more, or less of, each day. It emphasizes eating more grains and limited meat and fish.

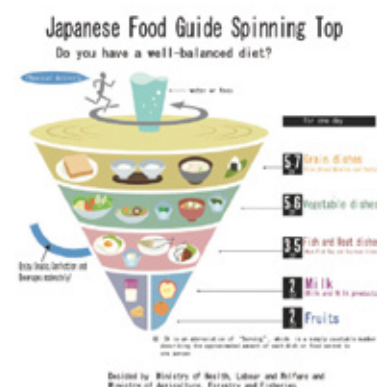
In China, eaters are encouraged to follow the Food Pagoda, which recommends a high intake of sweet potatoes, legumes, and soybeans, and limited intake of salt and oil.



In Japan, a spinning top graphic highlights healthy food choices. It recommends greater consumption of grains, vegetables, and fish over fruits and dairy. It also includes exercise advice and a snack and drink allowance.

And in some countries, governments are recognizing the health and environmental benefits of eating traditions of local cultures. Traditional diets that have sustained communities for centuries – even millennia

– often incorporate a wide variety of locally available, indigenous produce, legumes, and whole grains. Throughout Latin America, national food guidelines have begun to reflect a focus on local,



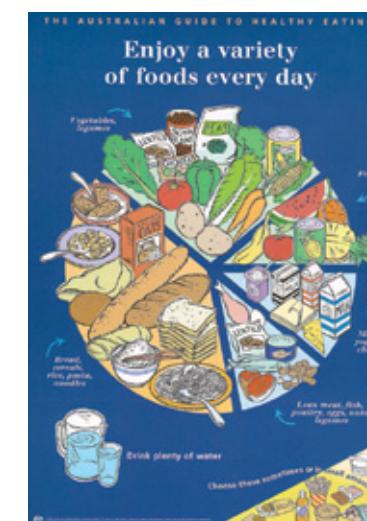
Research institutions and the donor community are also collaborating to develop contributions to the study of sustainable eating

traditional, and healthy food. In Argentina, people are encouraged to consume “fruits and vegetables of every type and color.” In Ecuador, the national guidelines are adjusted to fit the local food available in each province. In Mexico, the recommended diet blends influences from Indigenous, Spanish, and African cultures, reflecting the diverse background of the country's population.

Research institutions and the donor community are also collaborating to develop contributions to the study of sustainable eating. In New Zealand, a study undertaken by the University of Otago's Burden of Disease Epidemiology, Equity and Cost-Effectiveness (BODE3) Program in 2012 showed that a diet made up of foods with fewer greenhouse gas emissions was associated with lower rates of cardiovascular disease. The benefits of a diet with a small environmental impact included, among others, less saturated fat from meat, lower intake of sodium, and increased potassium intake.

The Global Environment Facility is supporting a project coordinated by the UN Environment Programme (UNEP), FAO, and Bioversity International called “Mainstreaming Biodiversity Conservation and Sustainable Use for Improved

Nutrition and Well-Being,” which will be implemented in Brazil, Kenya, Sri Lanka, and Turkey. The project will increase the use of biodiversity in agriculture as a tool for improving nutrition and health on a national basis through research,



policy, and awareness. And the Daniel and Nina Carasso Foundation awards an annual prize to researchers working toward developing sustainable, healthy diet guidelines. In 2012, the prize went to Jessica Fanzo, a scientist with Bioversity International, who has devoted her career to studying the relationship between ecologically responsible agriculture and nutrition. Through these efforts, governments and organizations across the globe are striving to educate their populations about healthy eating habits. As the

world population continues to grow, ensuring proper nutrition and environmental sustainability is crucial.

Danielle Nierenberg, one of the BCFN advisors, is co-founder of FoodTank: The Food Think Tank, where Eve Andrews is research associate. From 2009-2012 she was the Director of the Nourishing the Planet project housed at the Worldwatch Institute.

DOUBLE PYRAMID: THE IMPACT OF OUR FOOD CHOICES

“Tell me what you eat and I’ll tell you how you are and how the environment that surrounds you is.” This is the message of the Double Pyramid of Food and Environment, the nutritional model developed by the BCFN that helps to understand the importance of our food choices, and which is a useful tool to use every day for a healthy and sustainable lifestyle.

edited by **SILVIA ALPARONE**

Tell me what you eat and I will tell you how you are, how you will be, and how the environment that surrounds you is. Simplified into a slogan, this is basically the message of the Double Pyramid of Food and Environmental Impact developed by the Barilla Center for Food & Nutrition (BCFN): a graphical representation which synthetically translates the complexity of the data derived from the latest scientific studies on the nutritional value and the environmental impact of individual foods, in order to promote a diet that is sustainable for the individual and for the ecosystem. Now in its fourth edition, the 2013 Double Pyramid is further enhanced by the amount of data it uses and bibliographical sources for the scientific studies on which it is based.

Our choice of the food we eat is critical to the well-being of our body and the health of the ecosystem in which we move, and has important consequences on the quality of our lives today and in the fore-

seeable future. In addition to a certain value from the nutritional point of view based on the contents of carbohydrates, proteins, fats, or fibers, that have a direct impact on the physical fitness and health of the individual, each food has an environmental impact that must be assessed by taking into consideration its entire lifecycle.

This depends on many factors, including how it is treated before reaching our tables or the cooking needs related to its consumption, in terms of energy expenditure and resources. Three indicators were chosen to quantify this impact: the *ecological footprint*, which measures the Earth’s capacity to regenerate the resources used for the production of a single food; the *carbon footprint*, measuring the emissions of greenhouse gases during its lifecycle and their impact; and the *water footprint*, which instead, measures the consumption of water. Added to these is the *nitrogen footprint*, intended as a balance in the production of nitrogen along the food

25 global m²

is the daily ecological footprint of
a sustainable menu

45 global m²

is the daily ecological footprint
of a meat menu



supply chain. Each of these indicators ranks foods based on the footprint they leave on the environment. They are complementary to each other and, as a whole, allow you to define a fairly accurate overall impact of the food production process on the ecosystem.

REPRESENTING SUSTAINABILITY

The Double Pyramid is a good representation of the sustainability of our food choices for ourselves and for the natural environment. Alongside the traditional food pyramid, built on the basis of the distribution of food in a balanced diet, there is an environmental pyramid that assesses the ecological weight of each food, showing that the foods that best contribute to the maintenance of good mental and physical health of individuals are also those with a lower environmental impact. Thus, we can more knowingly choose our food supply. If it is true that the consumption of beef, in particular (but immediately followed by cheese, eggs, and fish), has a high impact on the ecosystem – and therefore these foods are inserted in the lower bands (6 and 5, respectively) of the environmental pyramid –, it is also true that these same foods are those that should be eaten less frequently, or in smaller portions in a balanced diet, and in fact, are found at the top of the food pyramid.

THE IDEAL DIET

After careful observation of the model, it is clear that the diet that is closest to the suggestions of the Double Pyramid model is the Mediterranean diet, recognized since the Nineties as the best diet for healthy individuals by the WHO (World Health Organization) and by the FAO (Food and Agriculture Organization of the United Nations). Since 2010, it has also been listed by UNESCO as an intangible cultural heritage of humanity. As well as the nutritional content of foods, however, one must also bear in mind the importance of the daily doses of each food, the need for regular physical activity, the conviviality at the table, and the right amount of water. The base of the food pyramid – derived from the union of the various international guidelines – is made up of seasonable, and therefore fresh, fruits and vegetables, of which we recommend a large consumption because they have a reduced-calorie content and provide the body with water, carbohydrates, vitamins, minerals, and fiber. The protein content is very low, as is the fat content. The carbohydrate intake from fruits and vegetables consists mainly of simple sugars, easily used by the body, and little starch. Foods of plant origin are also the main source of fiber which, in addition to regularizing bowel function, contributes to the feeling of satiety and, thus, helps to limit the consumption of foods high in energy density.

The environmental pyramid – elaborated by the BCFN and based solely on the indicator of the ecological footprint, which considers what effect food consumption has on natural resources, in terms of quality and quantity, also considering processes such as the cooking of it – places these same foods at the top of the pyramid because they have a very low impact on the environment.

If one kilogram of vegetables needs a minimum of one to a maximum of ten square meters overall (the unit of measurement of hectares are global) to provide resources and absorb the emissions associated with their production system, for the consumption of the same amount of beef, the square meters needed overall go from a minimum of 92 to a maximum of 157.

But the foods at opposite ends of the food pyramid, which are the ones that best exemplify the model of the Double Pyramid, leave quite a different impression when also considering the greenhouse gas emissions related to their life cycle and necessary water consumption, parameters on which specific pyramids have been constructed, to then draw conclusions about their overall impact. The *carbon footprint* pyramid, which uses as a measure the grams of equivalent CO₂, shows that a kilo of vegetables on our table produces a mass of greenhouse gases, predominantly CO₂, ranging from a minimum of 255 grams to a maximum of 5,020, while for meat this value ranges between 6,270 and 58,445 and for

cheese, this value varies between 5,300 and 14,545. Similarly, the pyramid built on the *water footprint*, which uses the liters of water per pound of food as a unit of measure, always shows that one kilogram of seasonal vegetables requires a range from 95 to 900 liters, while for the same amount of beef, the value is more than 15,000 liters.

IMPACTS IN THE WORLD

Over the years, the study of the Double Pyramid has evaluated eating habits throughout the world, making a reflection on three types of diet, all nutritionally balanced: the vegetarian menu, the meat menu, and the sustainable menu, which balances plant foods with meat, fish, eggs, and cheese. Each of these menus, in addition to having a nutritional composition different from the others on the basis of the food composing it, has an environmental impact that, as measured by the ecological footprint, results in different numbers: if the vegetarian menu has an ecological footprint of 15 square meters per day globally, that of the sustainable menu is 25 global square meters, and that of the meat menu is 45 global square meters daily.

And the impact on the environment also corresponds to a proportional cost for the consumers' pockets: from the nutritional and environmental point of view, the sustainable menu is such also from the economic point of view, since it correspon-



38 euro

is the weekly cost of a sustainable menu in Italy

ds to an average cost of €38 per week, compared to €35 for the vegetarian menu and €45 for the menu based on meat. This shows that diets constructed by balancing the food in a sustainable way are not necessarily the most expensive and often quite the opposite is true.

Different regions of the world, then, based on the local eating habits, produce a different carbon footprint, always measured according to the parameters mentioned above. For example, a French family, with 36% of their weekly expenditure consisting of fruits and vegetables and 14% from meat, eggs, and dairy products, produces a carbon footprint of approximately 113 kg of equivalent CO₂. A typical Australian family, always with reference to the weekly shopping, registers 34% of purchases consisting of fruit and vegetables and 26% in meat, fish, and eggs. The carbon footprint of their weekly expenditure will therefore be higher than the French family's, with about 122 kg of equivalent CO₂.

THE PYRAMID FOR THOSE WHO ARE GROWING

The Double Pyramid is a detailed study which seeks to bear in mind relevant aspects of culture and age.

In fact, although the analysis and classification of the food from the point of view of its impact on the ecosystem and its nutritional value has remained stable, the recommended distribution of portions of a balanced diet varies, depending on whether you consider the diet of adults or that of children and adolescents, who, for healthy growth, need a nutrient supply that is different from that of adults. If with regard to adults, the close relationship between poor nutrition, excessive body weight, and incidence of chronic diseases has now become part of the collective consciousness, the awareness that these also apply to children and adolescents is not as widespread: incorrect eating habits and lifestyles adopted in the period of growth may lead to an increased risk of contracting diseases in the course of a person's life, from cardiovascular disease to diabetes, and to various types of cancer. But, whoever the recipients of the advice of the Double Pyramid may be, it is worthwhile to consider that the further propagation of a sustainable diet is essential in nutritional, environmental, and economic terms, because it would contribute to a more efficient use of natural resources as well as a decrease in the economic and social costs caused by the most common diseases.

DOUBLE PYRAMID: A MODEL IN CONSTANT DEVELOPMENT

The choice of what food we buy depends on many factors, tastes, possibilities, contexts, and reflections. We buy food because we like it or because we do not like it but think it is good for us; because it has an inviting or fresh aspect, or is not too expensive; or instead, because it is "exotic", to take us far away, or local so we know where it comes from. Reconciling tastes, ideologies, and nutrition is never easy, but above all, juggling food that is healthy, good, and does not have a strong impact on the environment requires a lot of thought and energy. This is why, four years ago, the Barilla Center for Food & Nutrition began calculating – through international indicators such as the Carbon Footprint, the Water Footprint, and the Ecological Footprint – the environmental impact per kilogram of the foods included in the Food Pyramid. Over time, this study has been updated and has furthered new areas of research.



Creation of the Double Pyramid (2010)

Placing the Food Pyramid (which contains the nutritional value of foods that are good for humans) alongside the Environmental Pyramid (with the indications of what is good for the planet) shows that foods with less impact on the environment are also those that are the most suitable for human health.



Double Pyramid for those who are growing (2011)

Maintaining the same criteria for calculating the impacts of food, a reflection on the different dietary needs of children and people in the growth phase leads to the birth of the Double Pyramid for those who are growing. The impacts of the foods of the Double Pyramid for adults are analyzed by a new approach, with careful calculations on cooking techniques and food conservation.



Double Pyramid: enabling sustainable food choices (2012)

The certainty of a direct relationship between nutritional balance and environmental sustainability is renewed. But the important finding that eating healthy does not necessarily mean spending more is added. The calculation of the weekly expenditure of three nutritionally balanced menus shows that the one recommended by the BCFN is sustainable both for the environment and for the economy.

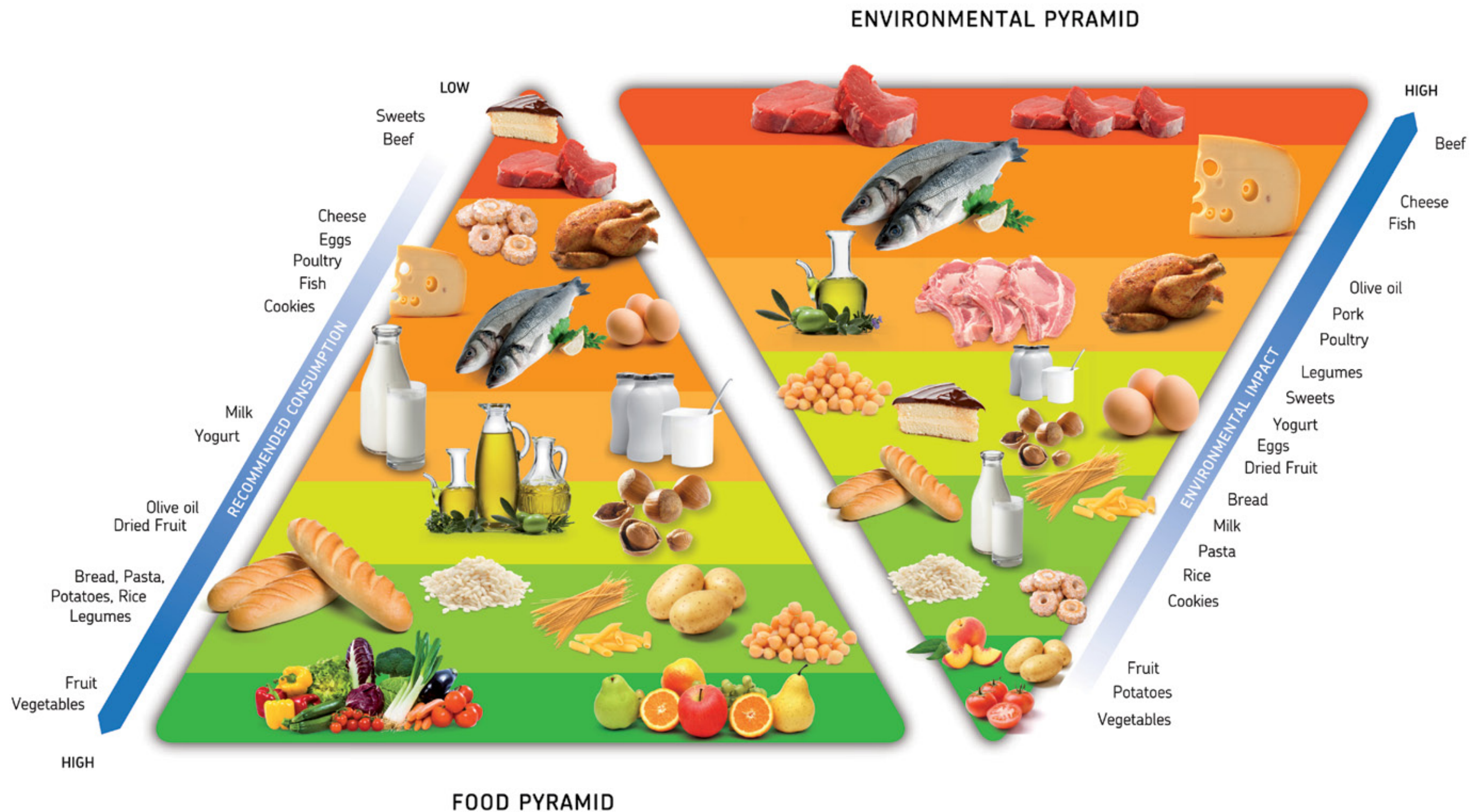


Double Pyramid in the World (2013)

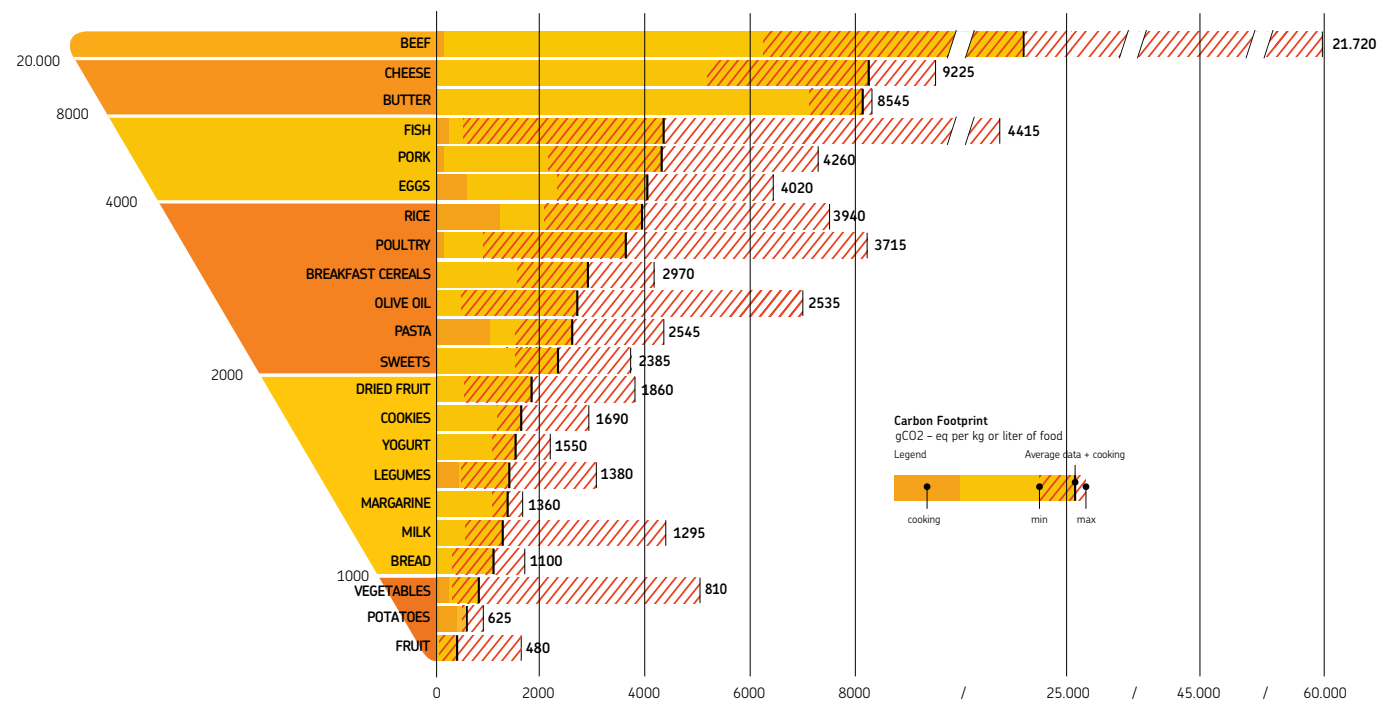
The study of the Double Pyramid is applied to different geographical areas, considering the foods that can be found in them and that characterize the different diets. It confirms the importance and validity of the dietary model that it proposes.

BCFN

THE FOOD AND ENVIRONMENTAL DOUBLE PYRAMID

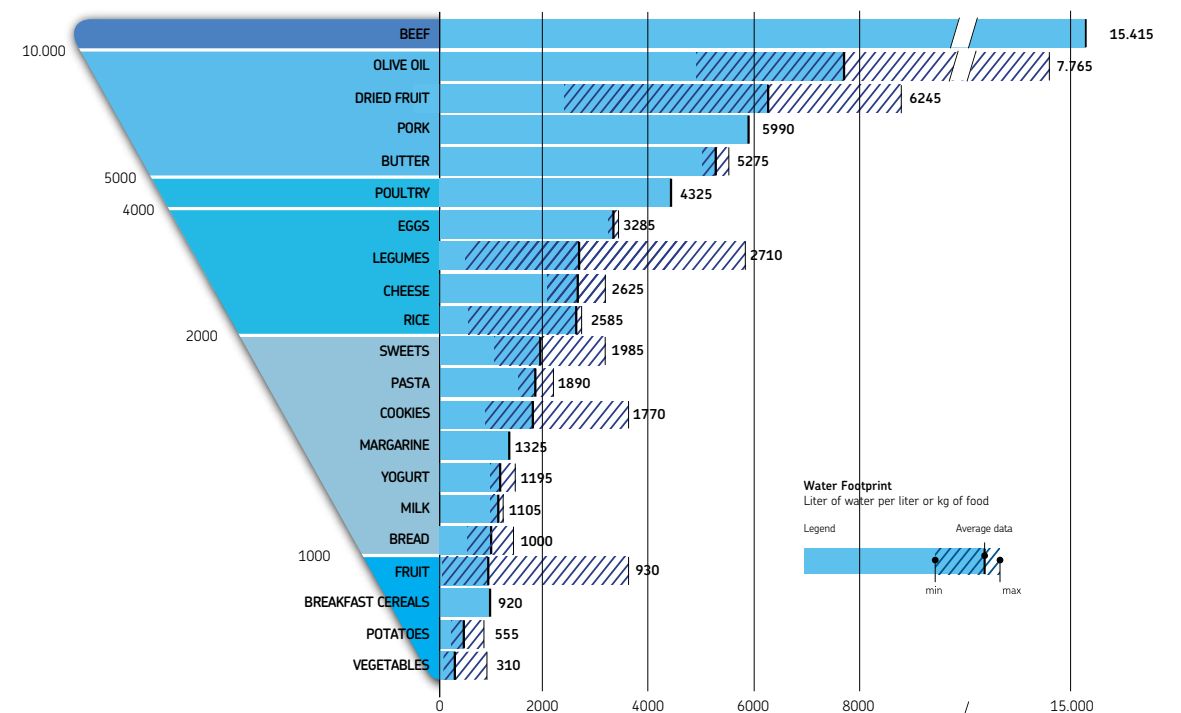


FOOD'S CARBON FOOTPRINT



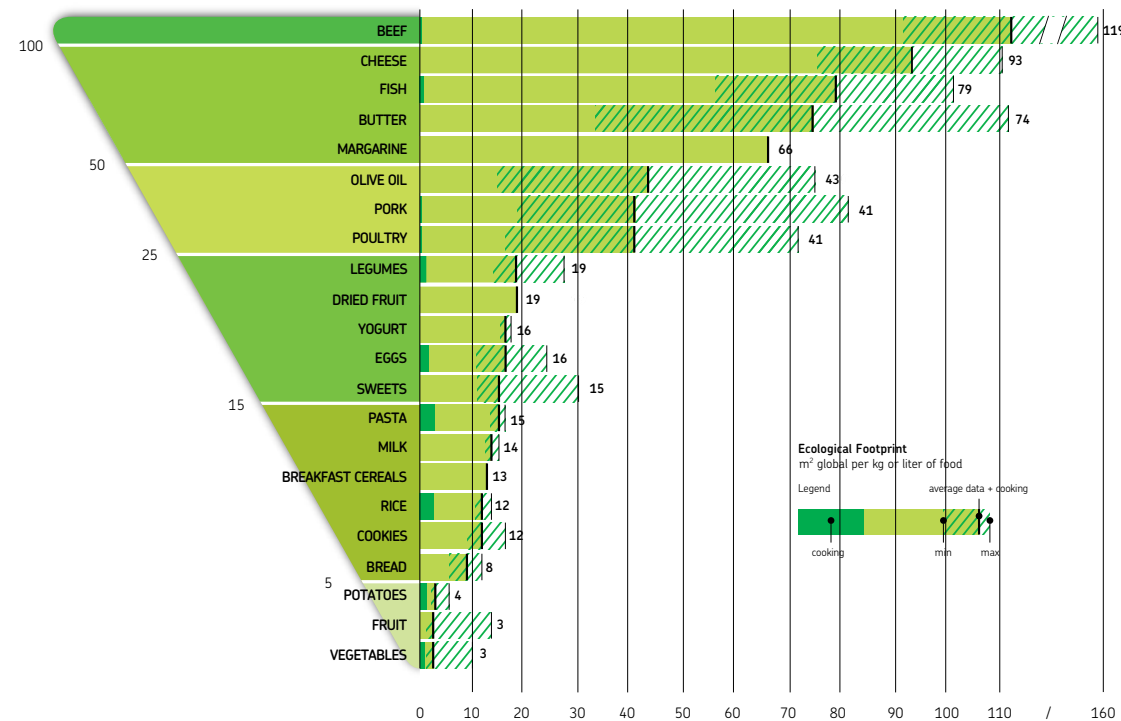
The carbon footprint, which measures the emission of greenhouse gases during the lifecycle of a food, is measured in grams of CO₂ equivalent (gCO₂ – eq). Depending on the available data, it has minimum and maximum values (dotted line) which may include data about the cooking process. The average determines the order of the foods.

FOOD'S WATER FOOTPRINT



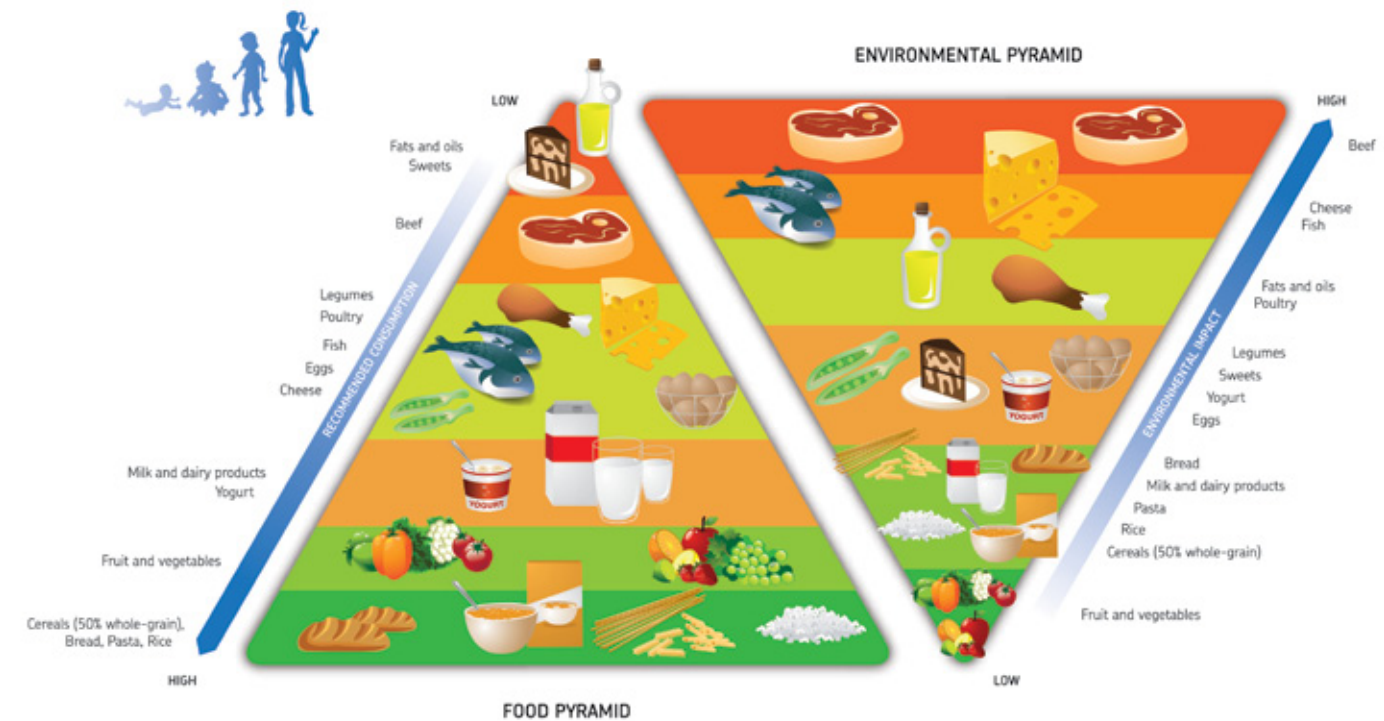
The water footprint, which quantifies the consumption and methods of use of water resources, is measured in liters of water per kilogram of food. Depending on the data available, it has minimum and maximum values (dotted line) that do not include data about the cooking process. The average determines the order of the foods.

FOOD'S ECOLOGICAL FOOTPRINT



The ecological footprint, which calculates the Earth's capacity to regenerate resources and absorb emissions, is measured in total square meters per kilo or liter of food. Depending on the available data, it has minimum and maximum values (dotted line) which may include data about the cooking process. The average determines the order of the foods.

THE DOUBLE PYRAMID FOR THOSE WHO ARE GROWING



A varied and balanced diet is even more important during growth. In this delicate moment, the hierarchy of food undergoes minor changes, but without affecting the overall pattern of the Double Pyramid.

PRACTICING SUSTAINABILITY WITH FOOD

Surveys on people's behavior concerning food in different countries offer an insight into the attitude of the world toward food: the increase in the percentage of working women, the economic crisis, and the reduction of certain costs of food processing are some of the factors that drive consumers to prefer products that are often "easier" but less healthy.

However, there are many initiatives around the world that aim to trigger a positive change in eating habits.

edited by **VALENTINA MURELLI**

Less red meat, more vegetables. Fish and dairy products without excess, many cereals (preferably whole-grain), and lots of fruits and vegetables. In short, these are the indications of the Food and Environmental Double Pyramid developed by the BCFN for a sustainable diet, a friend to better health and the planet. There is nothing too difficult about it, but this type of diet cannot be taken for granted, either in Italy or in other industrialized countries. But something is changing, at least concerning people's intentions, and all over the world experiments and initiatives to promote more sustainable choices are multiplying.

The picture painted by the last survey on food consumption in Italy, published in 2008 by INRAN, the National Research Institute for Food and Nutrition, is clear: we eat a lot of meat. At least 700 grams per person per week (especially beef, consumed regularly by 75% of Italians), compared to the 400-450 grams recommended by the International Agency for Research on Cancer. A good consumption of bread, pasta, pizza, and olive oil, and a discrete consumption of fish: these end up on the table of 68% of Italians, but in small quantities. As for fru-

its and vegetables, we each consume 418 grams per day, not much above the minimum of 400 grams recommended by FAO. The consumption of legumes is quite meager: 65% of Italians never eat them. In short, there is a lot to do toward substituting the classic slice of meat with a nice plate of beans, chickpeas, or lentils.

The carnivorous Italians are in good company, however: according to data collected by the European Food Safety Authority, a similar consumption is found in France, Sweden, and Germany. But the United States holds the first place, with 77.4 kg of meat per person in 2011 (almost 1.5 kg per week). Aside from a passion for beef, chicken, and pork, other trends emerge from a survey on eating habits conducted by Euromonitor International in four industrialized countries (USA, UK, France, and Germany) and two emerging markets (India and Brazil). There is an especially sharp increase in the consumption of snacks and fast foods, and a decrease in the time spent at meals, with lunch and dinner hours becoming more and more flexible.

These trends are related to various reasons, starting with the evolution of lifestyles: for example, the



rise in women's employment and the proliferation of commitments and activities have reduced the time spent preparing meals. And prices also play an important role. In fact, in recent decades there has been a significant decrease in overall food prices. On the other hand, it is true that this has mainly affected processed foods that are high in sugar and fat, while foods such as whole grains, fruits, vegetables, and fish continue to have relatively high costs. It is only natural that in times of crisis, these are the first foods to be eliminated from the diet, in favor of foods that are less expensive but also more refined and high in calories. Several studies have shown that a sustainable diet based on cereals, legumes, vegetables, and some dairy products is not necessarily more expensive than a diet rich in meat, desserts, and ready-made meals. But the fact remains that this type of food choice requires a certain degree of knowledge and available time for the preparation of food: that is why it is not surprising that, in the end, many families prefer foods with few nutrients and high caloric density, such as sweet and savory snacks, sugary drinks, and fast food products.

However, something is beginning to change at the level of awareness and intention, if not of behavior. First of all, we pay more attention to health, placing it in relation to dietary habits, as shown by the results of research on trends and behaviors in eating outside the home, conducted in 2011 by Datamonitor in 19 countries: 67% of the respondents said they make an effort "always" or "most of the time" to eat more healthily. Concerning the "environment," however, good news comes from a recent survey by the European Commission (Flash Eurobarometer 367) on the attitudes of Europeans toward a single market for sustainable goods. Out of more than 26,000 respondents, 95% declared that using environmentally friendly products is "the right thing to do" and 89% stated that purchasing sustainable products can make a difference for the environment. A "green" awareness at the table translates into a new attitude toward their favorite less-environmentally-friendly food, meat. If today only 3 out of 100 Europeans never eat meat and only 15 out of 100 consume it no more than once a week, among the regular consumers there are many who declare themselves ready to change their

habits. In particular, 80% of the respondents said they would be willing to eat less meat, as long as its origin was certified, 72% would replace beef or pork with chicken or fish, and 50% (60% in Italy) would replace most of the meat in their diet with vegetable alternatives.

However important it may be, though, it is unlikely that the good intentions of individuals can lead to drastic global changes. What is needed are mass initiatives at various levels that will help as many people as possible to adopt an eating style consistent with the Double Pyramid.

Take the diet of children, for example. Parents certainly play an important role in defining the behavior of children, but there is no doubt that advertising has its "weight," and usually in a negative way. We were reminded of this by an analysis carried out in 2008 on advertising contained in an American television program for children: 9 out of 10 commercials were related to food products that are high in fat, salt, or added sugar, and low in nutrients.

In other words, "junk food." Numerous studies confirm that advertising influences the food preferences of children and – through the pressure they put on their parents – their consumption, directing them toward high energy and unhealthy foods. So this is a delicate situation, but legislature can lend a hand. Not surprisingly, in

recent years there has been a decline in the consumption of snacks for children in the countries where it is legislated, such as Australia, where food advertising was banned for children under 14 years of age; the Netherlands, where publicity was banned for sweets for children under the age of 12; or Sweden, where cartoon characters cannot be used for advertising. Much can be done to promote more sustainable consumption also by directly intervening with good practices where people (children or adults) spend the most time and make most of their food choices: schools, workplaces, and retail outlets. For example, even simple measures may suffice at school, starting with offering a greater variety of fruits and vegetables: according to a U.S. study (Just, Lund & Price, 2012), for every extra fruit or vegetable that is proposed in the canteens of elementary schools, the proportion of pupils who eat at least one serving of these foods increases by 12%.

89%

of the consumers
think that purchasing
sustainable products
can make a difference

GOOD PRACTICES THROUGHOUT THE FOOD CHAIN

INDUSTRY

Rewarding food industries that are environmentally conscious is a great way to encourage even more commitment, transparency, and innovation. This is the idea of Compassion in World Farming (CIWF), an organization founded in 1967 by the English farmer Peter Roberts, which highlights the links between animal welfare, public health, food safety, and food issues by choosing to oppose food production with a negative impact on animal welfare. And therefore, on us and on the planet. Every year, the

CIWF rewards companies that choose to use only eggs from free-ranging hens, or chicken meat, pork, milk, and dairy products from animals reared in a respectful manner (according to a set of criteria developed by the CIWF on a rigorous scientific basis and which also improve the minimum standards required by law). In recent years, winners of the Good Egg, Good Chicken, Good Milk, and Good Pig prizes have ranged from the Coop to Ikea, from Barilla to Pavesi, and from Ben & Jerry's to Sainsbury's.

RETAILERS

Wegmans is an American chain of superstores that offers a wide variety of foods, especially fresh products. The attention given to the health of the food starts at its production; to be a Wegmans' supplier, food producers must pass a training course, designed in collaboration with university and government organizations, to obtain certification of their good agricultural practices (GAPs). The company's interest in health extends to the development of programs for a more balanced diet and to research, with the introduction of innovative products on the market and support to the Center for Produce Safety. In Europe, the Spanish chain of supermarkets and hypermarkets Eroski has included reducing its environmental impact as one of its main objectives. In this direction, there is an ongoing renewal of the packaging of Eroski products, guaranteeing savings that are the equivalent of more than 2,000 tons of CO₂ emissions, for every one hundred products.

COLLECTIVE FOOD SERVICE

Proper nutrition that takes care of the environment is also the objective of catering facilities, such as in canteens for workers. In 2008, Intesa Sanpaolo Bank launched the project "Gusti Giusti" (Right Flavors), implemented with the collaboration of Slow Food and the CTO Maria Adelaide Hospital in Turin. Initially intended for the offices in Milano Lorenteggio and Moncalieri (Turin), today it has become a reality in all ten of the Group's canteens. The project's objective: to spread the culture of proper nutrition among employees and reduce the CO₂ emissions related to the supply. Even school canteens can act in this direction: an example is the Basiglio Institute which, in addition to holding an Italian record for environmental compatibility (it is able to provide 100% of their needs without drawing any from the energy grid), also stands out for its choice of organic products with a short production chain that comes from land confiscated from the Mafia; the children are also served water poured from pitchers.

Making a food more palatable increases its consumption

And rewards also help, as demonstrated by the success of the Food Dudes school project, which started a few years ago in the UK and later extended to other countries, including Italy. There are two cornerstones of the initiative: a cartoon developed *ad hoc* with 4 superheroes who win over their enemies thanks to fruits and vegetables, and the offer of rewards (small gifts such as stickers or trading cards) for children who choose a “green” snack, during recess. The result: among the participants, the consumption of fruits and vegetables increased both at school and at home. However, sometimes it is just a matter of presentation: it is enough to just place the food whose consumption you want to boost so it can be seen easily and is close at hand, and in attractive containers such as colorful bowls for fruit, to make it more palatable. One piece of advice that applies not only to the young. For example, in the cafeteria at the Massachusetts General Hospital, they were able to reduce the consumption of junk food by putting healthier food and drinks, easily identifiable thanks to a colored label, in the most accessible places. And the trick seems to work well even in stores. An English survey conducted in 2009 and 2011 in 10 major retail chains showed that increased purchases of sustainable products were made near signs that had a specific approach to the issue and that proposed many products in this category by advertising them and presenting them well, perhaps even their own store brands. Moreover, accessibility and recognition are two of the issues which the results of the aforementioned survey by the European Commission also advises in order to promote the consumption of sustainable products.

The other one is the price, which should not deviate too much from that of non-ecological alternatives. Therefore, food proposals in the workplace play an important role in changing the eating habits of adults. In the Brazilian city of São Paulo, an intervention program on a sample of company canteens and cafeterias – with workshops on healthy cooking for the operators and information material for visitors – has led to an increase in the consumption of fruits and vegetables, reducing the intake of fatty foods. Similar results were obtained in Denmark with a study conducted in eight industrial plants, in which the importance of the involvement of the workers’ representatives to promote awareness and participation was also demonstrated. And again: a project to promote the Mediterranean diet – with activities regarding spreading information and creating *ad hoc* menus – is now successfully implemented in Barilla’s offices and factories in Pedrignano, and is also widespread in the other Barilla plants in Italy. In short, the message seems clear: changing eating habits and making them more sustainable is possible, especially if it is a common goal involving the efforts of everyone, from school administrators to employers, from caterers to lawmakers. This point of view is strongly shared by the Department of Nutrition of the prestigious Harvard School of Public Health, which in 2013, with the collaboration of the Culinary Institute of America, launched a yearly summit called Menus of Change, in which as many minds as possible – doctors, nutritionists, economists, chefs, and food educators – can meet to discuss new methods and strategies to make our food more tasty, healthy, and sustainable.



INSTITUTIONS

The education campaign LiveWell for LIFE, sponsored in part by the EU and launched in early 2012 by WWF UK, the WWF European Policy Office, and Friends of Europe, is one of the institutional initiatives to spread the concept of sustainable and healthy diet at the European level. Starting with France, Spain, and Sweden, the program’s goal is to limit emissions of greenhouse gases in each country by 25-27% and reduce some of the cost of daily expenditures. Li-

veWell 2020, a WWF initiative in collaboration with the University of Aberdeen, intends to do so within the next seven years, aiming to encourage the British to radically change their eating styles (for example, to go from a consumption of 79 kilos of meat per year to only 10 kilos). There are five principles to be observed: focus on fruits and vegetables, reduce food wastage, reduce the consumption of meat and processed foods, and choose certified foods.

LIVEWELLFORLIFE.NING.COM

FAMILY

According to the data from the latest Eurobarometer survey published in July, European households have developed a widespread awareness of the products that respect the environment. Two thirds of Europeans (66%) are convinced of the real benefit of these products on the environment and are therefore, to varying degrees, willing to purchase them, even if their cost is slightly higher. The proportion of citizens well-disposed toward sustainable purchasing is also high (77%), but they nevertheless need

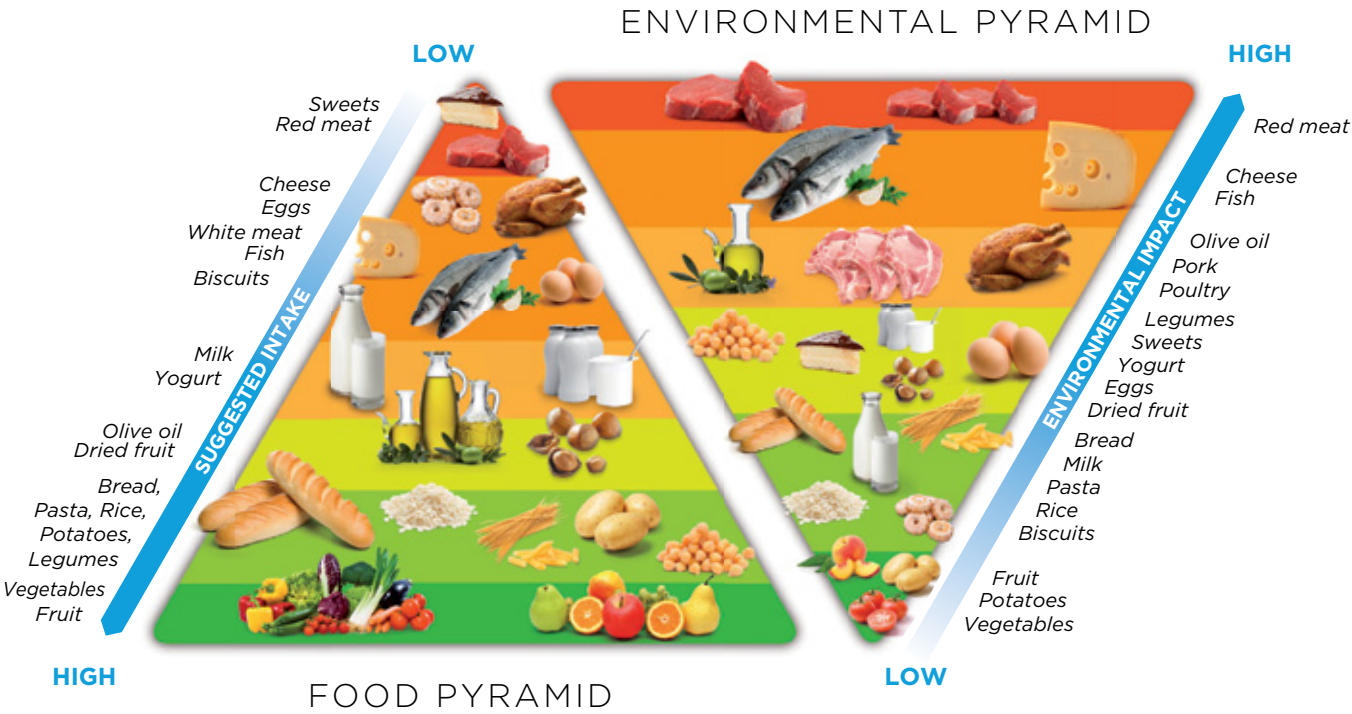
more confirmation concerning the actual impact of the products. In fact, only 55% of the respondents feel informed on the environmental impact of what they are buying.

This percentage, unchanged as compared to 2009, reflects a partially stagnant situation as far as information is concerned. The environmental impact is shown to be the third factor considered at the time of purchase, after quality and price, and before the brand of the product.

FLASH EUROBAROMETER 367 - EC.EUROPA.EU

THE “PRICE” THE ENVIRONMENT PAYS FOR OUR FOOD

The **Double Pyramid** illustrates that the foods that are better for people’s health are also those that have a lower environmental impact on the planet. The sales receipt shows us our weekly **Ecological Footprint***, or the **bill of expenses that the environment pays for each of us**.



From our shopping list ...



... to the supermarket:



The bill
the planet pays

*The footprint is the sign, i.e. the impact that each food and every one of us leaves on the environment. The Ecological Footprint is the amount of land or sea required to provide the resources, and absorbs the CO₂ emissions developed along the life cycle of a product, from the field to its disposal, and is measured in global m²

Source: BCFN (2012), Double Pyramid 2012; enabling sustainable food choices

VEGETARIAN MENU



Neither meat
nor fish for the
entire week

RECEIPT

cookies	1 m ²
butter	3 m ²
unsalted crackers	1 m ²
flour	3 m ²
rusks	1 m ²
cheese	59 m ²
fruit	5 m ²
milk	6 m ²
legumes	11 m ²
oil	6 m ²
vegetables	5 m ²
loaf of sliced bread	2 m ²
bread	4 m ²
pasta	5 m ²
potatoes	4 m ²
pesto	1 m ²
rice	1 m ²
croissant	1 m ²
citrus juice	2 m ²
fruit smoothie	4 m ²
eggs	3 m ²
yogurt	12 m ²

Total weekly impact **140 gm²**



ECOLOGICAL
FOOTPRINT*

ANNUAL
Impact
of approximately
7,280 global m²
per person
equivalent overall to
27 tennis courts

MEDITERRANEAN MENU



This diet favors the foods
at the base of the food
pyramid, with a balanced
daily consumption
of meat and fish

RECEIPT

cookies	1 m ²
butter	1 m ²
poultry	13 m ²
meat	12 m ²
unsalted crackers	1 m ²
flour	2 m ²
rusks	1 m ²
cheese	29 m ²
fruit	6 m ²
milk	6 m ²
legumes	11 m ²
oil	7 m ²
vegetables	5 m ²
loaf of sliced bread	2 m ²
bread	4 m ²
pasta	6 m ²
potatoes	3 m ²
fish	27 m ²
pesto	1 m ²
rice	1 m ²
croissant	1 m ²
salami	3 m ²
citrus juice	2 m ²
fruit smoothie	3 m ²
eggs	1 m ²
yogurt	12 m ²

Total weekly impact **161 gm²**



ECOLOGICAL
FOOTPRINT*

ANNUAL
Impact
of approximately
8,370 global m²
per person
equivalent overall to
32 tennis courts

MEAT MENU



Meat once a day
throughout
the entire week

RECEIPT

cookies	1 m ²
butter	1 m ²
beef	74 m ²
pork	2 m ²
unsalted crackers	1 m ²
flour	2 m ²
rusks	1 m ²
cheese	36 m ²
fruit	5 m ²
milk	6 m ²
legumes	11 m ²
oil	7 m ²
vegetables	4 m ²
loaf of sliced bread	2 m ²
bread	4 m ²
pasta	6 m ²
potatoes	3 m ²
pesto	1 m ²
rice	1 m ²
croissant	1 m ²
salami	1 m ²
citrus juice	1 m ²
fruit smoothie	3 m ²
eggs	2 m ²
yogurt	12 m ²

Total weekly impact **188 gm²**



ECOLOGICAL
FOOTPRINT*

ANNUAL
Impact
of approximately
9,780 global m²
per person
equivalent overall to
37 tennis courts

HUMAN AND ENVIRONMENTAL HEALTH, A NECESSARY UNION

by **GABRIELE RICCARDI** and **RICCARDO VALENTINI**

A DOUBLE PYRAMID FOR EVERYBODY'S HEALTH

BY **GABRIELE RICCARDI**

Constructed using the nutritional indications from the major institutions, the food pyramid has been telling us for a long time that, if combined with a healthy lifestyle, it promotes a healthy human life. In fact, at the base of the pyramid are the foods that should be consumed in large quantities, such as fruits and vegetables, as well as cereals, legumes, potatoes, and olive oil. Higher up, there are dairy products, eggs, fish, and poultry, of which an average consumption is recommended; instead, there should be a moderate consumption of red meat and sweets.

This dietary pattern largely reflects the Mediterranean diet, which is promoted by the Barilla Center for Food & Nutrition.

But human health, so strongly connected to our diet, and therefore to the foods we choose to consume daily, cannot be divorced from the health of

the planet on which we live. Because our survival depends on both.

Poor nutrition, in addition to making our presence on this planet more fragile, puts a strain on its resources, subjecting them to exaggerated and irresponsible stress.

For this reason, the BCFN has developed the Double Pyramid model, which shows that a diet based on an abundant consumption of fruits, vegetables, and grains, and a moderate intake of animal products – precisely as the main nutritional guidelines advise – not only has positive effects on human health but, thanks to its lower impact, is also good for the environment.

But, as often happens, habits and the comfort and convenience of the moment prevail over what could be the ideal way of eating, and most of the time we eat in a manner that is bad and damaging for the planet.

This is why, when explaining how healthy eating can mean respect for the environment, it is necessary that institutions, healthcare centers, schools, and families work as a network and explain



BCFN'S HEALTHY AND SUSTAINABLE TIPS

1

Share the centrality of the sustainable diet worldwide to develop pathways for allowing it to be implemented in compliance with local tastes and traditions.

2

Create awareness and activate all the components of the system - the world of research, institutions and associations, farmers, food companies, and supermarkets - in order to cooperate and act in harmony to promote healthy eating habits and reduce environmental impacts, within correct and viable lifestyles.

3

Evaluate more and more precisely the impact of the entire food chain so as to intervene at various stages of the lifecycle of a food, while taking into account the different local particularities.

4

Explain the impact of various foods on human health and the environment, by finding the most effective messages and channels for people to understand and, as a result, adapt their eating habits.

5

Pay careful attention to daily activities at home, such as cooking and refrigeration, which, in view of the large numbers of the population at the global level, determine an unsustainable impact.

6

Spread the Double Pyramid model, as well as the guidelines of the Mediterranean Diet, as a prime example of a Sustainable Diet.



We also act along the supply chain, supporting food companies and offering information on how to make their products more sustainable

how habits can change, that comfort and convenience also (and sometimes, especially) exist in a way of eating that is healthy and sustainable. It is important that a sustainable diet be studied at the global level, to understand if there is one valid model for all or if, depending on the country, its traditions, and its economic development, it is necessary to modify the nutritional indications. We must also act along the supply chain, supporting food companies and offering information on how to make their products more sustainable and how to communicate (through packaging and advertising that make it possible to understand what you have on your plate and what the effects of each food are on the environment).

To this, we can add the large-scale distribution, transmitting messages and making them comprehensible and accessible and, why not, pointing out to consumers which products are “good” and which ones are less so.

But communication must also go through other channels. It is therefore necessary to launch campaigns to explain, with data in hand, that a healthy diet is also cost-effective and sustainable, not only in the long run, but also right away. This can be done in catering, as well: corporate and school cafeterias are the ideal place to communicate daily, and to a large number of people, about good, healthy, and sustainable nutrition. And how to change their habits.

AN EATING STYLE WITH A POSITIVE IMPACT

BY RICCARDO VALENTINI

The link between what we eat and the environment we live in is now clear: in recent years, it has been shown how taking a responsible attitude in food choices can promote personal well-being and, more importantly, that of the environment.

In order to do this, it is important to have a sustainable diet, which is to say, an eating style whose impact on the environment – as measured by indicators of Carbon, Water, Nitrogen and Ecological Footprints – is as low as possible. And it is interesting to note that the Mediterranean diet is the best choice, not only for health but also for the environment, as the study of the BCFN on the model of the Double Pyramid has confirmed.

The estimated environmental impact of a food is calculated by considering its lifecycle, which examines the entire food chain, from the cultivation of raw materials, to the manufacturing, packaging, transportation, distribution, and consumption of the food.

Thus, our choices should not just concern the type of diet, and therefore a food regime such as the Mediterranean diet, based on a large consumption of fruits and vegetables, grains, and a reduced use of meat. Consumers should also understand what is



behind the food. For example, as regards the cooking of food, there are some actions that can weigh (positively) on the environment: reducing the amount of water used for cooking or putting the food in the oven as soon as the appropriate temperature has been reached are two simple precautions that affect CO₂ emissions. These do not cost us anything once we have memorized them and turned them into habits, and they also give the environment a bit of breathing space.

There are similar considerations regarding the cold chain: far from being pure evil, its impact is only relevant for frozen foods, which have a higher incidence than their freshly-bought equivalents. Finally, in terms of transport, it is interesting to note that delivering by truck, while producing high CO₂ emissions, has less impact per kilogram than air transport because far greater amounts can be carried. Overall, we can summarize that complex processes of the production and lifecycle of a food result in a greater impact on the environment. It

is important to keep these simple considerations in mind when preparing a shopping list and also deciding how to consume the food. In any case, the use of fresh and seasonal foods are to be preferred and attention should be paid to the type of packaging, which is preferably made of recycled materials that are, in turn, recyclable. Today, the problem, or rather, the challenge, is to disseminate this data to provide concrete answers and positively influence the eating habits of people, by identifying the most effective methods of communication and offering a range of everyday actions that can guide our choices toward sustainability.

Gabriele Riccardi is professor of Endocrinology and President of the Italian Society of Diabetology. Riccardo Valentini is a member of the Intergovernmental Panel on Climate Change. Both are members of the BCFN advisory board.

BCFN YES!

YOUNG EARTH SOLUTIONS!

The BCFN actively promotes the development of young ideas and solutions to promote concrete contributions concerning food and nutrition. Ten ideas are evaluated each year at the BCFN International Forum.

(BCFNYES.COM)

Double Pyramid: from theory to food label

by **Francesca Allievi**
(BCFN YES! 2012 Finalist)



Every day, in every part of the world, many people buy food. What they buy varies depending on their culture, their income, and their ethical principles. But are they really aware of how much these purchases mean for their health and the impact that their food choices have on the environment? The academic and scientific community provides us with a lot of evidence about the effects of different dietary habits on both human health and the environment. However, it is necessary to bring this knowledge to where it can really make a difference: to the consumers. If we consider that most of the food purchased is packaged, it is easy to imagine that people are more likely to read what is indica-

ted on the packaging of food than to consult scientific articles. The basic idea of my project, *Double Pyramid – from theory to food label*, is the key step that was still missing in a process of growing awareness: to transform the Double Pyramid – the model devised by the BCFN – into a food label that is both intuitive and easy to read, so as to provide consumers with the nutritional information and estimates on the environmental impacts of the food in question. A gradation of colors and two arrows at the sides of the Double Pyramid to get the information you need, right where it can be most effective; in our hands, at the exact moment we choose what food to buy.



Worldwide, a billion and a half people are overweight or obese and 868 million are undernourished

The GoodFood app

by **Behtash Bahador**
and **Linnea Kennison**

(BCFN YES! 2012 Finalists)

The Western diet, with its emphasis on meat and foods containing empty calories, contributes to the dichotomy between the estimated 1.5 billion people worldwide who are overweight or obese, while another 868 million are undernourished. Recent United States Census Bureau statistics alarmingly report that consumption of meats and dairy products are twice that of fresh vegetables and fruits, combined. This type of diet is both nutritionally dysfunctional and depletes natural resources that are currently scarce – namely, water and workable land. These patterns of food production and consumption suggest a lack of understanding about sustainable practices for both environmental and personal health. In order to strengthen the relationship between people, food, and the planet, guidelines for mutually beneficial food choices must be effectively communicated and promoted.

GoodFood, a web-based application for use on mobile devices, utilizes existing and credible sources of information to provide much-needed, personali-



zed dietary guidelines. This information is easy to access, with compelling visual images that help understand the environmental impact and the nutritional value of individual food choices. GoodFood also functions to strengthen local food economies and build communities where consumers, producers, nutrition experts, food policy advocates, and others create profiles and share valuable food information with one another. The world and its people are reaching a critical junction where the choices we make individually are having dire effects on our health and that of the environment. With *GoodFood*, the information and power to change our current counterproductive path now rest in the palm of our hands.

FOOD SECURITY

SCENARIOS OF A MEAT-EATING PLANET

The increase in the world's population and the growing purchasing power of a number of developing countries is causing an exponential rise in the demand for meat, a food with one of the highest environmental impacts. From artificial meat to a decrease in meat consumption, food industries, scientists, universities, and institutions are searching for solutions to this problem

by ALEX RENTON

One simple fact underpins the United Nations Food and Agricultural Organization's famous warning of 2009, that world agricultural production must double to feed the global population of nine billion in 2050. The fact is that as populations get richer, they demand more animal products. And meat, especially if it is intensively or industrially farmed, is a fabulously uneconomic and environmentally-damaging use of energy, food, and water. Currently livestock uses 40% of the world's grain crop – and, of course, the grain used to feed one human with meat would feed four or five vegetarians. Could human beings' hard-wired desire for animal protein be the greatest threat to future food security?

The meat issue has hardly appeared at any of the many summits and governmental meetings held on food security since food prices first started spiking in 2008. For most governments, development is the way to take people out of poverty

– yet development also means populations that will demand more meat. The simplest illustration of that is China's meat consumption, which has quadrupled in the last 20 years.

Professor Vaclav Smil, adviser to Barack Obama and the pre-eminent scientist working on global food supply and the environment, says in his new book, *Should we eat meat?* (Wiley Blackwell, 2013) that nothing foreseeable will fundamentally change today's practices of growing livestock for meat, "barring an unprecedented global economic depression."

So – what can we do? In the absence of any political response, private enterprise is investing in bio-tech for solutions to the meat and resources problem – although some of these lie near the realms of science fiction.

One recent attempt provides an intriguing insight into the issues – and the drivers behind the search for a new way of producing meat. In August 2013, at a packed media event in London,



the food writer Josh Schonwald had what he called a “Neil Armstrong moment.” He became the first human to take a bite of a burger made from laboratory-grown animal cells that had been colored and flavored with saffron, beetroot, egg, and caramel. The mouthful was the culmination of four years’ work by the Dutch scientist Mark Post at a cost of 250,000 euros. The price? Even today, Post could produce meat at 60 euros a kilo. Economies of scale would bring the price down to something competitive with today’s cheap meat. Ultimately, the “bioreactor” in which the tissue would be built would use an algae, cyanobacteria, to produce the proteins and energy needed. It would be fuelled by

production) “7-45% lower energy and up to 96% less water. Greenhouse gas emissions would be reduced 78-96%.” The paper stated that the land area needed to produce meat could be just 1% of what is currently devoted to meat livestock – and that is currently 60% of the world’s available agricultural land. It would free livestock’s grip on resources – if the public could accept it. The notion of a meat grown from animal cells but without using animals is very attractive. It addresses all the key concerns around industrial and hyper-cheap meat, from health to animal welfare to pollution and excessive resource use. It carries none of the ethical concerns of meat made from genetically-modified animals – al-

grain – perhaps 40% of all production – is currently devoted to livestock farming, much of it for resource-expensive meat that humans do not need for nutrition. But as food prices rise and the population grows during this century, the market should be able to force the necessary readjustments. (Let me be clear: the world has no other system to alter human diets.) Livestock’s contribution to greenhouse gas quantities is a more serious issue. The Intergovernmental Panel on Climate Change has suggested that animal farming and the production of inputs contributes more damaging emissions than even the transport sector (although the statistic has been challenged).

larger countries; initially from the plains of Canada and the United States. The apotheosis of that trade in transferring bulk food calories from one end of the planet to the other came with a vivid image earlier this year. The world’s biggest-ever traffic jam appeared off the coast of Brazil. 212 of the largest freight ships – some of them a third of a kilometer long – were waiting to load soy beans and soy meal, after the country’s greatest harvest ever. On land, the line of trucks coming in from the Amazonian Mato Grosso to deliver soy to the port of Santos stretched back 24 kilometers. When the ships finally loaded – and the delay caused hiccups in the world soy price – most of them



sunlight. Other commentators, though, suggest that it will be at least 20 years before a cultured meat would be either available, or marketable. Independent research done at the universities of Oxford and Amsterdam has judged that the bioreactor system could be very attractive. It would use (compared with conventional European meat

though that technology is already near production in salmon farming. Why, in a world where we farm more food than we currently need, should this idea be of any interest outside animal liberation fanatics and vegetarians bored of eating pulses? It is true that an absurd amount of land and human-edible

But, at the heart of the commercial need to produce meat protein in a different way lies, I would suggest, another problem. And it may account for the fact that the bulk of the research into cultured meat is going on in Holland, a land- and resource-poor European country, dependent for 100 years or more on imported grain from other,

were headed to China, where they would deliver their protein-rich cargo to feed pigs, fish, and chickens. The traffic jam off the Brazil coast marked the transfer of grains to livestock in the history of the planet. By June, 56 million tons had shipped to China. China’s soy imports in 2012 were

63 million tons, more than half of all world soy trade. This was on top of a Chinese harvest that, in 2011, was the largest any country in the world has ever known. But it will not be enough. By 2022, China is forecast by the U.S. Department of Agriculture to import more soy than America or Brazil (the world's largest producers) currently grow, 102 million tons. And the Chinese government is making huge deals with other land-rich countries to ensure a long-term supply of other grains – like an agreement with Ukraine to supply 3 million tons of corn per annum. “China’s need to feed its ever-growing population of meat animals is reshaping the world,” says the environmentalist Lester Brown. Less than 20 years ago, China was self-sufficient in soy production. But that was before the country began to get rich, and the familiar mechanism of rising affluence and higher meat consumption kicked in. Chinese meat consumption has nearly quadrupled in that time. Unless, of course, glo-

bal economic growth should happen to go into long-term reverse. If there is one single issue behind the dire predictions of FAO for 2050 it is China’s changing diet and the demands for meat as its population grows richer. Of course other factors, like climate change, inform FAO’s scary analysis. But the simple fact that as populations get richer, they demand more animal products is the biggest threat to future food security. And there are many more hungry, poor carnivores – sub-Saharan Africans currently eat around 20 kilos each per year, compared with Europeans’ 80 kilos or more.

The Chinese eat hardly half that, and they hardly use the most resource-expensive meat, beef. Indians hardly eat meat at all, but have a massive dairy industry. If economic growth continues in India, China, and other Asian tiger countries, by the end of this decade they will require all the soy the world currently harvests to feed their dairy cows, pigs, chickens, and fish. Some

analysts predict Chinese meat consumption will peak at 90 kilos per annum, per capita – which would consume more than a third of current total world meat production. Professor Smil points out that even if by 2030 rich nations were eating 25% less meat and fish, a mere 10% rise in consumption from the poor and developing nations would mean a massive rise in demand.

What must worry meat-eaters in “old rich” nations in Europe and America is that China is not just making sure it has a supply of animal feed crops for the future. It is also buying the other end of the livestock production chain. In May 2013, it was announced that Smithfield, the iconic American meatpacking business, was being sold to China. The company had risen, through takeovers, to become the world’s biggest pig farmer. The buyer, Shuanghui, is China’s biggest meatpacker. The \$4.7 billion deal, if U.S. regulators OK it, will be the biggest sale ever of an American business to China. Together, the two firms will slaughter more than 30 million pigs a year.

The deal means that, for the first time, the majority of world meat production is out of the control of the old rich nations, those that first industrialized. East Asia has been producing more chickens than any other region of the world for at least 10 years, and the global trade is dominated by a Thai company, Charoen Pokhpand. Beef – and, to an extent, pork – are near-monopolized by another global company that comes from the South, Brazil’s JBS – and that country is now the world’s leading exporter of beef and chicken. In 1933, Winston Churchill, then an under-employed journalist, published an essay, “Fifty Years Hence.” Among his predictions was this: “We shall escape the absurdity of growing a whole chicken in order to eat the breast or wing, by growing these parts separately under a suitable medium.” He was short of a few years in timing his forecast. But the “absurdity” of what we now do to feed the planet on animal protein has never been more apparent.

The British journalist Alex Renton is an expert in food security. He writes for publications including the Guardian, the Times and the Observer, and his newest book is entitled Planet Carnivore – why cheap meat costs the Earth (and how to pay the bill).



FEED THE PLANET BY SAVING RESOURCES

The United Nations Environment Programme (UNEP) has recently published the report *Our Nutrient World: The challenge to produce more food and energy with less pollution*, which highlights the problem of the unbalanced use of manure and fertilizers. The massive use of nitrogen, phosphorus, and other substances that are necessary for the growth of plants has, in fact, produced an advantage from the point of view of nutrition and energy production, but it has also caused pollution of the water networks and the atmosphere, with impacts on human health.

The challenge which governments around the world are called to focus upon is to restrict their use by implementing a comprehensive management system for the use of fertilizers. Reducing the consumption of meat can be a step in this direction, because it would involve reducing the amount of grain intended for intensive breeding, with positive consequences regarding the use of fertilizers. Thus, not a vegetarian diet, but a *demitarian* one, which halves the amount of meat currently consumed.

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HEALTHY DIET
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IF THE MEDITERRANEAN DIET IS TRENDY

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The Mediterranean diet, declared an Intangible Cultural Heritage by UNESCO and which is found in Italian, Spanish, French, and Greek traditions, is now recognized globally as a style of healthy eating. In recent years, its merits have been recognized especially by actors, athletes, and models, who have become real testimonials, exporting it not simply as a trend, but as a lifestyle.

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by **ELISA POLI**

The wide variety of foods in the Mediterranean diet is an indication of its high nutritional quality and respect for biodiversity, but that is not all.

Following this type of diet helps to contain costs – which is indeed a relief to our purse strings – and to respect the environment, thanks to the reduced environmental impact of fruits, vegetables, pasta, bread, and yogurt. In addition, some good news for everyone is that eating “Med” keeps us beautiful and in shape longer.

The first people who noticed and have appropriated these eating habits – declared an Intangible Heritage of Humanity by UNESCO – are precisely the people whose job it is to be beautiful and talented. Entertainment and sports stars from around the world have rediscovered a menu that the Italian, French, Spanish, and Greek popula-

tions have been putting on their tables every day for decades, even centuries.

Therefore, even if our local diet has become more attractive and desirable with this new “patina of glamour,” the substance does not change. We are not the ones copying the celebrities, their habits, and the latest crazes, as usually happens, but, for once, we can actually boast and declare that they are the ones who have drawn inspiration from our cuisine. Voluntarily or involuntarily, by telling the media about their choices, they are conveying an important message about health and sustainability.

Many beauties of the movie and TV screen follow the principles of the Mediterranean diet or diets inspired by or similar to it.

Catherine Zeta Jones attributes her high energy level and good humor to a diet based on ve-





getables and smaller amounts of carbohydrates and proteins, but she prefers to never mix them. “Desperate housewife” Eva Longoria fills up on vitamins and anti-stress substances through vegetable and fish protein, especially blue fish, rich in Omega-3 essential fatty acids, while products that are too refined and dishes that are overly processed are banned from her pantry. In fact, among the “magic” ingredients in the Mediterranean diet, not only are there the right proportions of the different nutrients such as vegetables, carbohydrates, proteins, and fats, but also one of the most undervalued things in the Western world: simplicity. Today, however, the ability to prepare dishes with just a few things, such as bread, tomatoes, olive oil, and basil, which can be turned into bruschetta, panzanella, or pappa al pomodoro depending on the type of preparation and the addition of other ingredients, is no longer considered as a necessity for coping with poverty, but a symbol of tasty and healthy eating. Putting more vegetables, fruits, and vegetable protein on the table does not only mean savings in energy resources but also in personal ones.

Since he has been engaged to the actress Olivia Wilde, who is a vegetarian and an excellent cook, the actor Jason Sudeikis said that by eating vegetable dishes a bit more often, he has stopped gaining weight. Foods with little processing are digested more easily and their light and fast cooking enhances the nutritional quality of foods. This helps for better performance in school, at work, and even on the sports field, which is a well-known fact to Italy’s national soccer team. At Wimbledon, athletes keep their muscles and reflexes in shape with whole grain bread and crackers, fresh and dried fruit, and low-fat yogurt. Switzerland’s Roger Federer, who over the years has brought home 17 Grand Slam wins, is an avowed fan of the Mediterranean diet: before each match, he eats a plate of pasta or rice topped with tomato sauce. More than a diet, ours is a lifestyle that is much loved and promoted by women around the world. If the President of the United States, Barack Obama, defeated his opponent in the election campaign, John McCain – who propagandized BBQ pork and beef – by stating that his favorite



dish is a nice arugula salad with parmesan, his wife Michelle has gone even further. She is the proponent of the vegetable garden at the White House and of programs to fight childhood obesity and to give tips on the effects and benefits of a healthy diet rich in fruits and vegetables, as well as on its environmental sustainability. Gwyneth Paltrow, who runs every day and eats vegetables, fruits, and whole grains, preferring legumes, fish, poultry, and eggs for protein intake, has made the secrets of her great figure available to everyone, thanks to the publication of her cookbook. Paltrow, as well as Sarah Jessica Parker, is a member of the Food Bank for New York City, an association aimed at supporting people in difficult economic times and spreading a culture of food that is free of social barriers. Fighting hunger in the world and a desire to give food its proper value are also in the actions of Brad Pitt and the soccer-player Kakà, linked to the World Food Programme. The Mediterranean diet is also the choice of diet “when pregnant.” Italian food and an Italian nanny for Kate Middleton. And the same diet for



Today, the ability to prepare dishes with a just few things, like bread, tomatoes, olive oil, and basil, is a symbol of eating that is good and tasty

Penelope Cruz, who eats pasta every day and loves blue fish, artichokes, mozzarella, and extra virgin olive oil, which also makes physical exercise easier. Small habits that give great results. Kate Hudson, who does not believe in slimming diets, has returned to her pre-baby size due to a better awareness of what is right to eat, while Carla Bruni has chosen to limit her salt intake through the use of spices and herbs, and to get her protein from fish and eggs. In short, foreigners really love the Made in Italy diet and products: pasta, buffalo mozzarella, artichokes, and D.O.P. tomatoes are sought after by celebrities who take advantage of travel and tours in Italy to stock up on goodies. So does the actor Robert de Niro, the singer Lady Gaga, and Facebook founder Mark Zuckerberg, who did not abstain from food shopping even during his honeymoon. Some celebrities have even preferred to purchase a fixed retreat in Italy for enjoying delicacies: this is the case of George Clooney, who owns a house on Lake Como, and Sting, who has an estate in Chianti in Tuscany, where he enjoys producing extra virgin olive oil.

COOKING FOR THE PLANET

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From Tataki in San Francisco, to the Blue Hill restaurants in Manhattan, to the neighborhood of the British Museum in London, the location of Arthur Potts Dawson's "supermarket of everything" that has enthused the British people: the trend in restaurants and supermarkets that take care of people by paying great attention to the health of the environment.

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by **SILVIA CERIANI**

From a provocative definition such as "sustainable sushi" to an obsession for local food applied on a large scale, to the battle against food wastage undertaken to educate the extremities of the food chain, from farm to fork... Increasingly, star chefs but also pub cooks are taking on a key role in the interpretation of sustainability, applying this concept to their cooking.

In fact, as stated long ago by Jonathan Safran Foer, "now we know, we are the generation that has the responsibility of this knowledge," and we cannot be entrenched behind a supposed ignorance regarding our food choices. More and more, we are bombarded with articles, studies, and documentaries that warn us about the consequences of our diet: consequences that affect both our health and the environment that surrounds us.

Yet, one often gets the impression that this hype about "no-no food" and "yes food" has the effect of confusing the consumer. "What really is good for me?" "What will have less impact on the environment?" Here then, the chefs may be able to respond effectively to these questions, giving

an empirical spin to the results of studies and surveys.

For example, an interesting case is that of Tataki (www.tatakisushibar.com) in San Francisco, which is fighting to bring sustainability into one of the most unsustainable dishes in the world: sushi. As Paul Greenberg stated so well in *Four Fish*, "The global rise of sushi, coupled with an incapacity at the international level to formulate a functional agreement on tuna fishing, has led to the progressive decline of many fish stocks." Along with tuna, however, there are many other species affected by this fashion without borders (from Japan to the United States, almost everyone likes sushi, even those who do not usually like fish). Tataki began like so many other restaurants of this type: serving bluefin tuna and swordfish regardless of their environmental impact. However, at some point, it radically changed paths, replacing the endangered species with other less obvious fish whose stocks are abundant and healthy, and succeeding in creating harmony and balance between the delicate flavor of the fish and the fragility of marine ecosystems. Another equation that Tataki seems to have solved is that





The goodness of a meal has
a positive impact on both
human health and on that of
the planet



Consuming foods discarded
by large retailers helps the
environment



of the indications of dietitians, who advise us to eat more fish for our health, and that of environmentalists, who discourage us from consuming fish because of the exhaustion of stocks. In some ways, Tataki can be seen as a precursor of an influential movement in the world of catering. The need to combine the instances of pleasure and environmental well-being is, in fact, becoming more widespread, also thanks to the work done by institutions such as the Monterey Bay Aquarium or by journalists like Charles Clover, promoter of the Fish to Fork campaign (www.fish2fork.org), activated to inform the public about the quality and sustainability of the fish served in British restaurants.

Just as in California, where Kin Luy and Raymond Lo began thinking about sustainability in a controversial issue such as fish stocks, on the East Coast, Dan Barber imposes his philosophy on the magnificent obsession for local food in his restaurants in New York (The Blue Hill and The Blue Hill at Stone Barns, forty minutes from Manhattan: www.bluehillfarm.com). An obsession that has earned him many awards and accolades. All his work is based on a simple but

revolutionary idea: from-farm-to-table. To establish a direct relationship of proximity between production and consumption, serving organic products which are grown on the farm which belongs to the restaurant or are purchased from trusted producers. It is understandable, therefore, that the chef interprets the act of cooking and serving food as a celebration of local ingredients. For this reason, extreme care is given to all foods, starting with their origin: from a simple tomato, that will be sweeter, richer in vitamins, and more tasty, to the lamb cutlet, whose tenderness will reveal the competence of a breeder who has chosen the best pasture for the animals. Barber focuses on seasonal foods, organic products, those that have not traveled thousands of miles before reaching the pot. He makes his expertise available to his customers, who can easily find out the whole story of what they have on their plate. The good taste of the meal has a positive impact on human health and on that of the planet: good taste that is not an end to itself, but which reveals a constant ethical and environmental concern. You have to cross the ocean and arrive in London, near the British Museum,

to experience the ideas of Arthur Potts Dawson, who owes his fame to the fact of being Mick Jagger's grandson, but especially to the scope of his ideas, which have also become the subject of a documentary broadcast by Channel 4.

Sustainability, reducing food waste, and convenience are the three pillars of the People's Supermarket (www.thepeoplesupermarket.com), a real point of reference not only for white-collar workers and authentic Londoners, but also for the unemployed and immigrants of different nationalities.

It is a cooperative you join by paying a small sum to the partnership and by committing to contribute four hours of volunteer work monthly. In return, you are entitled to a 10% discount on your expenditures, the opportunity to decide what is sold in the supermarket – and it is no coincidence that the choice falls on organic, local, and fair-trade products –, as well as the opportunity to sample at the People's Supermarket those “imperfect” foods that large retailers would have destroyed rather than distributed on the street. Dawson seems to have learned well from the many books published on the subject

of waste in recent years. For example, in Waste, Tristram Stuart cites plenty of figures and highlights the scope of what we allocate to the garbage daily, from the field to the supermarket shelf, to the table.

Instead, arriving at the People's Supermarket without having traveled too many miles, and directly from the manufacturer, there are also slightly crooked carrots, lumpy potatoes, and spotty apples.

Quite the opposite of what happens in the retail giants, infamous for large amounts of food produce refused or thrown away before their deadline. The environment clearly gains a lot because the People's Supermarket administers its resources in the best way possible. And our health? Well, it is on the side of the fresh, the local, and the natural. And all these elements are guaranteed, in London, near the British Museum. Health and the environment. From many points of view, these are deeply interconnected topics. And in every corner of the world, there are chefs and cooks prepared to illustrate this. To educate clients about healthier lifestyles. To tell us that if the planet is better, we'll feel better, too.

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A CONVERSATION WITH ENRICO CRIPPA
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WHEN A HOE CAN BE FOUND IN THE KITCHEN

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by NICOLA FERRERO

Enrico Crippa, who was born in 1971, is a chef whose restaurant Piazza Duomo earned the coveted three Michelin stars this year, and he is probably one of the few chefs who has won over the hearts of clients and critics, especially because of his salads. His restaurant features the dietary models that are consistent with the Double Pyramid developed by the Barilla Center for Food & Nutrition – illustrating that the foods which are best for the body (vegetables, fruits, and cereals) are also those with a lower environmental cost – and is particularly interesting for this reason. In a world where 1,600 liters of water are used in order to produce 100 grams of ground beef, while only 19 liters are needed to produce a pound of tomatoes, and 133 liters are required for the same amount of bread, it is essential to give due importance to gastronomic ingredients with a lower environmental impact, even though they are apparently often overlooked because considered less refined.

Enrico, you have one of the most famous restaurants in Italy and among its specialties are the salads 21, 31, and 41 (named for the number of their ingredients, ed.). In addition, you tend a vegetable garden, along with two other helpers, where you grow the raw materials for Piazza Duomo. To me, that seems to be a very precise philosophical and ethical statement...

Yes, we feel very close to the “green component”: the vegetables, the leafy greens, and the sprouts. So much so, that when the project for the restaurant arose, that was one of my first requests: to be able

to have a garden where we could grow things using biodynamic cultivation, because I strongly believe in vegetables. And then, Italy is the land of vegetables. So, this desire of mine managed to materialize thanks to the Ceretto family, who allowed me to do it and have always been very supportive. And thanks also go to those who have constantly worked with me on the vegetable garden project.

Do you think it is difficult for a chef of your caliber to combine a more ethical and environmental aspect with the needs of a great restaurant?

Yes, a little. The difficulty is also due to the geographical area where it is located, that is, the Langhe area. You see, I would really prefer to cook only vegetable dishes. However, this is virtually impossible: a bit because we are in Piedmont, an area that is strongly connected to meat, cheese, hazelnuts, and truffles; and a bit because we operate in an area that produces great wines, especially reds, whose perfect pairing is with meat. In addition, this area is strongly linked to the territory, with a culinary tradition that is deeply influenced by the winter seasons (just think of braised meats, agnolotti, tajarin with roast drippings, and pot roast). But I am satisfied, because I have managed to create my own style, my own path, and my own way of thinking about cooking, where my green signature is always present.

Studies by the BCFN show that the best diet for the body and for the environment calls for the consumption of meat and fish a few times a week. I find it interesting that there is very little





meat in the dishes you propose, whereas its presence is more massive in the à la carte listings on the menu, almost as if you were making a suggestion...

Exactly, and precisely for the reasons that I mentioned earlier. Some people who come to Piedmont to check out the restaurant are more inclined to sample a tasting course, but then there are others who just want to drive through the Langa area, or drink a bottle of Barolo, and it is more likely that they will choose from the à la carte dishes. On a whim, they will try the raw meat, for example. It is like a game, as well, to satisfy the various demands. And the winning formula is... to make the menu reflect your passions, without ever forgetting that the restaurant is a business, so in order to stay afloat, it must also turn a profit.

Over the past decade, news about the safety of foods and their environmental impact has been circulating more and more. But the diet of Italians has not changed much: they still eat a lot of meat, consume plenty of whole grains with their pasta, but eat few vegetables and fruits. In your opinion, in recent years, during which the media importance of chefs has greatly increased, can your category have a positive impact on consumers also with regard to their education?

Yes, that is what I hope. Also because I really believe in this new way of eating, in which vegetables have a dominant role. We have more and more vegetarian or vegan customers who are fond of our restaurant. I also see consumers paying greater attention to farmers' markets: they are highly successful, in part for the prices, and in part for the quality. And then the-

re has been so much input, such a lot of discussion about the fact that mankind was probably not born carnivorous because, physically, we are much closer to herbivores: our teeth, for example, or the fact that our intestines are as long as those of herbivores and not as short as those of carnivores. So much the better when it is fashionable to be fit, healthy, and beautiful, if it means a higher consumption of vegetables, vegetable protein, and fish. I honestly thought that our daily diet had changed a little, also seeing what occurs in the restaurant, but it seems like the data says that the changes have not been so remarkable... What I can tell you is that when Scandinavians come here, perhaps because they do not have all the vegetables that we do because of their climatic conditions, they go crazy when they see our salads. They light up and make you understand that, probably, the future is right there. I have always liked to cook with vegetables, I have always believed in them, and in the end, it gives me more satisfaction to work with those raw materials than going to the butcher and buying a hunk of meat that is already set to be cooked. Taking something from the earth, washing it, cleaning it, paying attention to the weather forecasts, to the cold, heat, drought, or hail...

Moreover, a chef also creates within limitations, to the extent that there are certain vegetables in the summer that are not found in the winter, and vice versa...

Absolutely, seasonality should be followed and respected. This year, for example, we finished collecting the asparagus in late June. And the customers were telling us: "How can that be, you have asparagus on the menu in June?" That is how it went this year, it was a strange season. In August, the zucchini were slow to ripen, while in July we gathered up two or three cases a day and the diet of the kitchen staff was: pasta with zucchini, boiled zucchini, stuffed zucchini... But I like having to adapt my menu to what I can pull from the garden.

I read in an interview that you inherited the passion for cooking from your grandfather and that one of your childhood memories is of him leaning over a market stall and smelling and touching the fruits and vegetables before buying them...

He would follow the markets that moved every day



Seasonality should be respected: I like having to adapt my menu to what I can pull from the garden



from one village to another in the vicinity of where he lived. I was curious about seeing him there, choosing and discussing with the vendors and then returning home to spread out his purchases on the table and decide what he would cook. It was nice, I don't know else to express it. Also, he had fought in Albania and Greece, and was a bit of a hero to me. Whatever I did was in imitation of him and therefore, probably, he is the one who pushed me to get where I am today.

This was also a way of coming around to the matter of the importance that family education can have on consumers...

Absolutely, if you have ever eaten a freshly picked tomato from your grandfather's or your father's garden, you know how it tastes. When you have the taste of a genuine product in mind, you cannot eat anything else.

If in addition there is also a sentimental component that binds us to some memories, some personal experience...

What I said about the memory of feelings that you experienced so many years before often happens with regard to vegetables and fruits. For example, during the harvest period, we often serve fresh hazelnuts that have just been shelled, neither roasted

nor dried. A short time ago, there was a lady about sixty who called me over after tasting them to tell me that it had reminded her of when she used to gather hazelnuts with her grandmother. And she truly lit up. It wasn't because of the dish, but because of that very small element, that particular taste. This little thing meant a lot to me.

You have often praised simple ingredients. It would be nice if those who come to your restaurant learned from your work, and once they are back home and have to do the grocery shopping, remember that a great chef uses raw materials that, although perhaps poor, are of the highest quality.

On our menu you will find cod, with Jerusalem artichokes, even sweet potatoes. Perhaps at one time, though much less nowadays, there was an association between a great restaurant and great foods, such as caviar, lobster, and stuff like that. Those who understand the message we want to give by using products from our vegetable garden are aware of the costs we have in carrying it out: I have to pay two people to work eight or ten hours a day, seven days a week. It is like having two more people working in the kitchen. The real luxury is no longer buying a tin of caviar, but being able to buy four hoes and a trimmer to tidy up your garden.

COLUMN

APPETITE

It is estimated that the number of obese people in Europe has tripled since 1980. And that if action is not taken quickly, especially concerning children, the prevalence of overweight people in some countries will even reach 90% within the next 15 years. This is the warning given by the World Health Organization, photographing this growing phenomenon in which a series of short- and long-term malfunctions are associated with a number of inefficiencies, such as mobility problems, low self-esteem, and an increased risk of cardiovascular disease and diabetes.

by **ELISA BARBERIS**

STARTING FROM EARLY CHILDHOOD

With over one million children between the ages of 6 and 11 who are overweight – a figure (from the childhood surveillance system of the Ministry of Health, “An Eye on Health”) that is growing by 2.5% every five years –, Italy is sadly the European record-holder. This is why proper nutrition needs to be established at an early age. To help new mothers, there is HAPPY MOM, an iPhone app (€ 1.79) to help them manage in the world of babies: a true multimedia guide on what to eat during pregnancy, diseases that can be transmitted through food, breast-feeding, and then, weaning the baby. Do you still have any doubts? A dietician will directly respond.

HEALTHY EATING, GROWING WELL

Knowing our body and what it needs is the first step: for this, from children to the elderly, following a few simple rules can help

you stay healthy. Too much animal protein, saturated fat, and sodium, and few complex carbohydrates are the most common mistakes made by those who do not take care of their diet. There are numerous applications that allow you to keep a diary of everything you eat, but iFood (at the Apple store, in the “Lite” version free of charge, and “Pro” at a cost of € 0.89) also allows you to create a profile with your current weight and goals, as well as to count the calories and update the list of food ingested.

TO EACH THEIR OWN

But how can you maneuver through the labyrinth of the endless combinations of dishes? If you are not sure how many times a week it is “right” to put meat or cheese and sweets on the table, the food pyramid will be able to tell you. NOT ONLY DIETS (for iPhones at € 0.89) explains the history, usefulness, and importance of each food for the body. Figuring out the appropriate quanti-



ties is not easy: different nutrients must be present in the correct amount to produce the substances needed for the renewal of tissues and for protection functions. Any “cure” is a delicate balance that requires the definition of personal daily calorie needs. There are anti-cholesterol, anti-cellulite, or aphrodisiac diets, or those to combat the flu or smog, or to help you sleep: in the vast archives, it will be easy to find one that suits you.

“EAT IT, FEEL GOOD. GIVE IT, FEEL BETTER”

And once you have learned to count calories, how do you dispose of the excess? At least virtually. GIVE YOUR CALORIES (free on the Apple Smartphone) will think for you. By photographing the dish or sandwich or else by scanning the barcode of the drink you are going to consume, the app calculates the number of calories in real time and converts them into a monetary value. It starts with a

dollar – enough to feed a child for a day – for foods with less than 200 calories, and it adds another dollar for every additional 100 calories. With one click, you can then decide to donate the amount to Action Against Hunger, through PayPal. It is a concrete way to give the calories that we decide not to consume to those who really need them.

SAVERS OF RESOURCES

However, to achieve a better balance, the food pyramid must be taken into account, of course, but also that of the environment, which studies and measures the impact of food. The model shows that in order to produce, distribute, and ultimately dispose of a tomato, 13 liters of water are needed, while the lifecycle of a slice of bread requires 40 liters; 100 grams of cheese need 500 liters; and a burger needs 2,400. To become an aware consumer, there is WATERPRINT, for finding out the amount of “blue gold” that is indispensable for every daily activity.

FOOD AND THE ENVIRONMENT

DIETS THAT ARE
HEALTHY FOR PEOPLE
AND FOR THE PLANET

OCTOBER 2013

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RESEARCH AREAS

Food for All

Access to food and malnutrition: the BCFN reflects on how to promote a better food system on a global scale and how to enable a more equitable distribution of food resources, encourage social welfare, and reduce the impact on the environment.

Food for Health

The relationship and the delicate balance between diet and health: the BCFN has collected the recommendations of scientific institutions around the world and of the most qualified experts, and explains its proposals to facilitate the adoption of a proper lifestyle and a healthy diet.

Food for Sustainable Growth

An analysis of the food chain aimed at signaling the existing weaknesses and assessing the environmental impact of production and consumption. The BCFN proposes good practices and recommends personal and collective lifestyles that are able to have a positive impact on the environment and resources.

Food for Culture

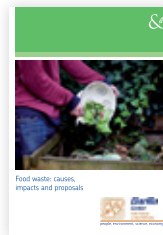
The relationship between mankind and food, its stages throughout history, and an analysis of the current and future situation. The role of the Mediterranean diet in the past and, according to the BCFN and major scientific studies, the current important task: rebalancing the relationship of people with their food.

BCFN PUBLICATIONS

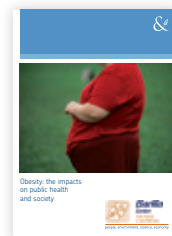
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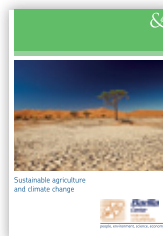
Nutrition & well-being for healthy living



Food waste: causes, impacts and proposals



Obesity: the impacts on public health and society



Sustainable agriculture and climate change



Double Pyramid 2012: enabling sustainable food choices



Eating in 2030: trends and perspectives

2013



Food for health: paradoxes of food and healthy lifestyle in a changing society



Combating waste: defeating the paradox of food waste

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**Fondazione
Barilla**

il tuo cibo, la tua terra



Young students and researches around the world proposed original solutions on the topic of: **'Food and Sustainability: how to reduce our environmental impact, guaranteeing health and access to food for all'**.

The ten finalist ideas will be presented at **the 5th International Forum on Food and Nutrition**, to be held in **Milan on November 26-27, 2013**.

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