







# THE NATURE OF FOOD.

#### JUST ONE **EARTH** To feed the entire **PLANET**





## THE PROJECT 'The Nature of Food. Just one Earth to feed the entire Planet'

The project comprises a whole series of different initiatives that together make up the themes of Expo 2015 in the Italian Regions, directly involving individuals and families that will visit the Oases and the WWF Environmental Education Centres in 2015, along with the WWF Milan office near the Ex Serre gardens (in Zone 1 of the city).

By directing general attention of the 2015 Universal Exposition to the theme "Feeding the Planet, Energy for Life", WWF wishes to stimulate reflection on the current relationship between the quality of individual diets and the preservation of the structures and functions of ecosystems that all contribute to supplying our food (as a fundamental service of the ecosystem) both globally and locally. It also wishes to stimulate consideration about the sustainability of agricultural practices and of food chains for the preservation of water resources, the fight against climate change, and the protection of biodiversity.

Project "The Nature of Food: Just One Earth to Feed the entire Planet" made with the support of the Ministry of Agriculture, Food and Forestry, Decree n. 93824 of 12/30/2014 - Code CUP J83G14001750001.

ALL CONTENT RESPONSIBILITY IS OF THE BENEFICIARY OF THIS PROJECT, AND DOES NOT REPRESENT THE OFFICIAL POSITION OF THE MINISTRY OF AGRICULTURE, FOOD AND FORESTRY.

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THE AGENDA OF THE ACTIVITIES AND EVENTS SCHEDULED FOR THE PROJECT TOGETHER WITH ALL THE DOCUMENTS ABOUT THE TOPICS ARE AVAILABLE IN THE WEBSITE: WWW.WWF.IT/LANATURADELCIBO

May 2015

## **INTRODUCTION**

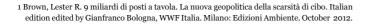
Our societies are going through a moment of **transition from an era** of abundance in food availability to a situation of scarcity. It has become increasingly clear that, in the words of Lester Brown<sup>1</sup>, food is as important as oil and agricultural land is as precious as gold in this new historical period.

With the destruction of the tropical forests, the exploitation of marginal lands and the exploitation of environmentally sensitive areas, agriculture and animal husbandry have become the main environmental threats to the biosphere. Agriculture already occupies a large percentage of the earth's surface, destroying habitats and biodiversity, consuming water, polluting rivers and oceans, and, with animal husbandry, emitting a quantity of greenhouse gases much higher than is the case with any other human activity.

It is now clear that in order to guarantee the long-term health of the Planet, we must drastically reduce the negative impact of intensive agriculture. We must reduce the consumption of natural resources, transform markets and change our lifestyles. The global food system must ensure adequate food for more than seven billion people currently living on the Planet (over a billion still suffer from chronic hunger!) and guarantee adequate food for over two billion people who will be added in the next thirty years, and this will have to be done in a way that is environmentally sustainable and equitable from the social and human rights points of view.

These are the themes of EXPO 2015, "Feeding the Planet, Energy for Life", the universal exhibition in Milan which for the first time includes the participation of the civil society: like other NGO's, the WWF is a "civil society participant" and offers a rich programme of events and contents providing its contribution in terms of ideas, critical reflections and concrete proposals. Participate with us in this important challenge, following the advice that you will find in the pages of this booklet: all individual and community changes on their food behaviours as all the insight of how the food system works are steps forward to the sustainability of the Planet. Enjoy reading!

> Donatella Bianchi (WWF Italia President)





Donatella Bianchi (Presidente WWF Italia)

## WHAT YOU USE Will use up the planet

Global warming, desertification and biodiversity loss are just some of the changes that the Planet is currently undergoing, in part because of the way we produce and consume food.

The current food system based on fossil fuels, on wasteful food habits, on pollution and on the overexploitation of resources that has evolved and become deeply rooted in western industrialised societies is no longer a feasible model, neither for the countries that created it, nor for those that have sought to imitate it.



OUR FOOD CHOICES DEEPLY AFFECT OUR OWN FUTURE EXISTENCE ON THIS PLANET.

Today we have a real opportunity to forge a new sustainable food model that finally puts nature and the human being at the forefront, and that properly acknowledges an irreplaceable capital resource that is the fundamental basis of our well-being.

## **SUSTAINABLE EATING**

A sustainable diet means eating healthy food, with a low foodprint in terms of soil usage and water resources, with low carbon and nitrogen emissions, and one that is attentive to the preservation of biodiversity and ecosystems, that is rich in local and traditional foods, and that is fair and accessible to all.



Globalisation has moved the focus from sustainability towards the intensification and industrialisation of farming and distribution methods. However, **the steep rise of globalised food production has not led to improvements in global nutrition.** Today the number of undernourished people has swelled to more than a billion and at the same time obesity - and chronic diseases associated with it - has reached similar figures.

**Current food production and consumption trends must therefore undergo radical changes**, with special attention being paid to all those entities involved, and to an increase in the demand and availability of healthy foods that should be environmentally friendly, have undergone little industrial processing, and are grown in the traditional regions of origin. They should respect biodiversity, available resources and local cultures.





THE STEEP RISE OF GLOBALISED FOOD PRODUCTION HAS NOT LED TO IMPROVEMENTS IN GLOBAL NUTRITION

## **SUSTAINABLE DIET?** A MATTER OF FOODPRINT

In order to assess the environmental impact of a certain food, its entire life cycle should be assessed, with all stages of the food chain being adressed "from farm to fork".

The pressure that food production exerts on the environment can be evaluated through the set of **footprints** that, starting from the main **ecological footprint**, measure the **impact that certain processes have on natural resources through various aggregate** indicators. **WWF** has focused its attention on the calculation of three footprints that we consider extremly useful for analysing the impacts of the food system:

- **1. Carbon footprint,** namely **the amount of greenhouse gases** emitted throughout the supply chain from the field to distribution;
- Water footprint, namely the amount of water consumed or polluted during cultivation/breeding and the industrial processing phase;
- **3. Nitrogen footprint**, namely **the amount of reactive nitrogen** introduced into the environment during cultivation/breeding.





These environmental pressure indicators capture three critical aspects on the impact of human activity on the environment. The impacts expected from carbon footprint are globally significant, while the impacts of water and nitrogen footprints are mostly relevant on a regional and local level.

## A SUSTAINABLE DIET? Carbon Footprint Matter

The second biggest cause of climate change in the world is CO2eq emissions arising from the rearing of animals, that is from the large amount of meat that we consume. To reduce emissions we must cut down the amount of meat in our diets, eating mainly grains, fruits and vegetables.

For every beef steak weighing 250g, around 3.4 kg of CO2eq is emitted, the equivalent of a car with a medium-large engine capacity that travels 16 km. Production of the same weight in potatoes meanwhile produces around 0.06 kg of CO2eq, which is 57 times lower than that of the steak.

Replacing just one meat-based dish per week with a typical dish from the mediterranean diet would save 180 kg of CO2eq per year.

Both seasonality and the place of origin are important even in how we choose our fruit and vegetables. In fact, **the production of 1 kg of out of season tomatoes releases 3.5 kg of CO2eq, mostly due to the heating of greenhouses, while the same quantity of tomatoes produced in a field in summer releases less than 0.05 kg, a whole 70 times less.** 

The increased movement of goods leads to a drastic increase in CO2 emissions, as well as other pollutants.



K. Havia/WWF Canor



CO2eq MEANS CO2 EQUIVALENT, WHICH IS THE UNIT THAT ALLOW TO WEIGHT TOGETHER THE EMISSIONS OF DIFFERENT GHG WITH DIFFERENT CLIMATE IMPACTS.

## A SUSTAINABLE DIET? WATER FOOTPRINT MATTER

Only 2.5% of all the water on earth is fresh water. Most of it (79%) is not available because it is enclosed in ice caps and glaciers. 20% of it comes from groundwater. Lakes, reservoirs, rivers and wetlands therefore make up less than 1% of available freshwater. Today 70% of global water withdrawals is for agriculture use.

By analysing the data on the water footprint of different foods, it has been shown that foods in the mediterranean diet - of which a frequent and regular consumption is recommended (grains, fruit and vegetables) - have the least impact in terms of consumption of water resources. Conversely, foods of which a very moderate consumption is recommended (meat and animal derivatives) are those with the greatest water footprint.

More generally, water consumption varies from around 1,500-2,600 litres for a vegetarian diet and around 4,000-5,000 litres for a meat-rich diet.



#### WATER FOOTPRINT: WHAT IS IT AND HOW IS IT CALCULATED?

Water footprint is a sustainability index that makes it possible to measure the total amount of water consumed or polluted for bringing about a finished product. It is the sum of three components (Water Footprint Network):

- **Blue water footprint** is the volume of freshwater withdrawn from the natural cycle (taken from surface waters and groundwaters, i.e. rivers, lakes and acquifers) for domestic, industrial or agricultural purposes (eg. irrigation);
- **Green water footprint** is the volume of rain water transpired by plants during cultivation;
- **Grey water footprint** is the amount of polluted water, measured as the amount of water required to assimilate pollutants so that the water meets specific water quality standards once again.



13 LITRES OF WATER ARE REQUIRED TO PRODUCE A TOMATO, 40 LITRES OF WATER ARE REQUIRED FOR A SLICE OF BREAD, AND 500 LITRES Are needed for 100g of Cheese, and 2,400 Litres of Water Are required for a Hamburger.

#### WWF - MUTTI COLLABORATION: AN EXAMPLE OF BEST PRACTICE TO REDUCE THE WATER FOOTPRINT OF THE FOOD CHAIN

For several years now an innovative project on water footprint has been developed for a key Italian agricultural product: tomatoes. The collaboration between **WWF** and **Mutti** - a leader in the production of tomato concentrate, pulp and passata - has made it possible to calculate and establish targets for reducing the water footprint for an entire chain of production, from the growing of tomatoes, to processing in factories, to the packaging of the finished product. Mutti has voluntarily committed with WWF in a project to reduce the water footprint (-3% by 2015), through measures designed to improve the efficiency and effectiveness of field irrigation and to reduce the use of fertilisers. By adopting special tools for monitoring soil moisture, it has been possible to determine the exact irrigation requirements of the tomato, saving 14% of the water on average. The saving on the volumes of water used in irrigation ultimately results in a reduction of the total water footprint.



WWF CIVIL SOCIETY PARTICIPANT OF MILAN EXPO 2015

WWF will be taking part in the Milan Expo 2015, 'Feeding the Planet, Energy for Life' with a programme of events and initiatives focused on analysing the environmental impact of food chains, on their current nonsustainability, demonstrating their significance in terms of 'footprints' on natural systems and their impact on biodiversity in the Mediterranean and worldwide. Expo 2015 is the first universal exhibition that involves the official participation of civil society: which is why charities and NGOs have together chosen to be active at the Expo and to take the opportunity to express their views on crucial issues such as world hunger, sustainability and fairness. WWF's journey to take part in the Expo began in 2011, when together with numerous other associations of various types (cooperation, solidarity, environmental, local) the **People's Expo committee** was set up to support the voice of international civil society and farmers' movements on the central themes of Expo 2015, with a special focus on **food sovereignty** and on **environmental justice**.



www.wwf.it/chi\_siamo/ partners/mutti



www.mutti-parma.com/wwf



www.expodeipopoli.it/ www.expo2015.org/it www.padiglioneitaliaexpo2015. com/it

## NOURISH THE GOOD HABITS.



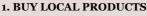












Eat fresh products, buy local products to support your local economy, and reduce CO2 emissions by reducing the transportation of food.

2. EAT SEASONAL PRODUCTS Fruits and vegetables are seasonal, follow the seasons and cut the costs for

vourself as well as for the Planet.



**3. LIMIT YOUR MEAT CONSUMPTION** Limit the number and size of meat portions you eat every week, only eat meat produced with traditional and organic methods, and try to alternate with vegetarian protein sources (such as pulses).

#### **4. CHOOSE THE RIGHT FISH** Give priority to local species, buy in legally standard sizes, and try to choose from a greater variety of species.

#### 5. REDUCE WASTAGE: IF YOU HAVE BOUGHT IT, EAT IT

Nearly 1/3 of the food we buy ends up in the bin. In addition to wasting money, this also has a high impact on the environment.

## NOURISH THE GOOD HABITS.













#### 6. CHOOSE ORGANIC PRODUCTS

Organic farming is based on respecting all the natural ecological processes, as well as the natural resources (soil and water above all) and biodiversity, by eliminating all chemical and synthetic substances.

#### 7. AVOID HEAVILY PACKAGED PRODUCTS

We can choose to buy products with less packaging. Packaging will otherwise become wastage, which contributes to high costs for disposal as well as for the environment.

#### 8. AVOID HIGHLY PROCESSED FOOD

This requires a lot of resources to be produced and stored, and has a high impact on the environment. Processed food also contains high quantities of salt, sugar and fat.

#### 9. DRINK WATER FROM THE TAP

The best water doesn't necessarily come from a bottle. If we protect our rivers, lakes and aquifers, we can have good quality drinking water directly from our taps at home.

#### 10. AVOID WASTAGE IN THE KITCHEN

In addition to eating your leftovers, if you use your stove correctly you can avoid 'burning' extra resources. 10 SIMPLE RULES TO EAT SUSTAINABLY

WWW.IMPRONTAWWF.IT/CARRELLO/

## A SUSTAINABLE DIET? A MATTER OF NITROGEN FOOTPRINT

#### Nitrogen is essential for life in the formation of amino acids, proteins and DNA.

The limitation of this substance in nature placed a limit on the expansion of life on earth.

Such a natural limit also manifested itself in our societies' agricultural sectors, where intensive use of land sometimes led to its depletion and to shortages. Just over 100 years ago, we managed to surpass the natural limit thanks to **synthetic fertilisers (comprising of nitrogen and phosphorus)** which allowed agriculture to obtain unimaginable yields on non-fertile land.

Today, the industry produces 120 million tonnes of nitrogen per year and the problem is that ecosystems take in more nitrogen than they are able to use, which generates imbalances in the natural cycle and widespread pollution (of rivers and seas for example).

There are initiatives that we can take to return to safe nitrogen levels: there should be a transition towards sustainable agriculture and it is important that we individually halve our consumption of meat and dairy products.





### THE IMPACT OF FOOD ON SPECIES AND HABITAT

**Biodiversity is the cornerstone of food production.** It ensures a range of different and nutritionally-healthy foods, it guarantees resilient production methods (with a view to climate change) and methods that are resistant to diseases.



The diversity of ecosystems and species is, today, more and more subject to pressures exerted by our rapidly increasing population, that is consuming more and more, that is fundamentally changing and degrading the environment. **Many wild species are at risk of extinction due to unsustainable management of agriculture, livestock and fisheries.** 

In Indonesia, Malaysia, the Amazon and Cerrado large forest are destroyed to produce commodities as palm oil, coffee and soy.

WWF is working to create more sustainable global supply chains through the development and application of farming and management methods of fishery resources, agriculture and forestry which are based on the respect for biodiversity, for natural equilibria and for the rights of local communities threatened by irresponsible production systems.



#### **BIODIVERSITY AND SUSTAINABLE SUPPLY CHANGES SECURE DIVERSE FOOD RESPONSIBLY PRODUCED.**

# © M.Gunther/WWF Canor

## THE AMAZON ON A PLATE: The growth of the soya bean

A century ago, the soya bean was virtually unknown outside of Asia. Today, **millions of people throughout the world eat meat, eggs and dairy products from animals fed with soy;** traces of soy are also found in many processed foods. Few are aware of this however. **In recent decades, soy has undergone greater expansion than any other crop, threatening forests and other important natural ecosystems.** The total area planted for soybeans now covers more than 1 million km2 (an area the size of France, Germany, Belgium and the Netherlands put together). **Several globally significant forests are at risk, mainly the Amazon.** 

However, it is possible to promote a few solutions that can satisfy the need for soy without damaging priority ecosystems, developing best practices for producing this resource and certifying it. For this reason WWF is committed, along with other environmental organisations, producers, distributors and financial institutions in the Round Table on Responsible Soy (RTRS), to promoting a responsible production and usage of soy.

# THE OIL THAT THREATENS THE HABITAT OF THE ORANGUTANS

The removal of the rainforests to make room for palm oil plantations is theatening some of the most valuable areas of the Planet and endangered species, such as the orangutan (*Pongo Pygmaeus*), and is seriously jeopardising local communities. Palm oil, a versatile and cheap raw material, is present in an astonishing number of products, from cosmetics to packaged sweets. The palm tree is grown mainly in Indonesia and Malaysia (over 85% of all palm oil used in the world).

The palm oil industry, however, can reduce its impact on the environment. Many major companies have taken on the objective of applying best management practices that can ensure economic and social benefits without threatening biodiversity, by applying strict criteria during every production phase, as those prescrived by the Round Table on Sustainable Palm Oil (RSPO), where environmental as WWF and social NGOs, producers and buyers of palm oil establish global standards to make production of this resource more sustainable and to certify it.



## A FAIR COFFEE

After oil, coffee is the most traded product in the world. Because of its growing demand, extensive land occupied by natural forests is being converted into plantations, which is another key cause of deforestation. Among the most affected areas is Indonesia (the second largest exporter of the Robusta coffee variety, the type that is used in packaged and instant coffee).

**WWF is working with** the Indonesian government to increase both controls on national parks, where illegal crops were discovered in the past, and incentives for local farmers to switch to forms of sustainable farming.



#### MILK, DAIRY PRODUCTS AND ENVIRONMENTAL ISSUES

The dairy industry is having impacts on some of the most sensitive natural areas of the Planet: it is a huge industry that numbers 250 million dairy cows globally.

This industry in fact poses a number of challenges for the environment: the **methane emitted by cows' digesting** and cow manure, are the most serious consequences of production. Pollution **and the release of nutrients into waterways are the result of this.** Finally, it is also responsible for the **conversion of land**, especially the tropics, that are used to growing feed for animal rearing.

Only in the Amazon the conversion of forests into agricultural land and pasture is one of the main causes for deforestation rates (1.6 million hectares per year), a loss which is threatening the survival of the jaguar (*Panthera onca*).

**WWF is working** internationally to promote expertise and good agricultural practices, helpful to improve the sustainability of production.



## **THE IMPACT OF FISHERIES**

Until the 1990s it was a common belief that fisheries products (*fish and shellfish*) could provide for a significant portion of global protein demand.

It was said that production would reach 100 million tonnes and this would have been enough to meet economic development in much of the world. In 1989, 90 million tonnes of fish were caught, however since then we have witnessed a **continuous decline of overall catches in the face of an almost constant presence of fishing vessels in the sea**.

This overfishing has been facilitated by the mass application of fishing technology that has been made possible by public subsidies.



WE HAVE CAUGHT More Fish than it has been reproduced



We have therefore caught more fish than the reproductive potential of fish populations have been capable of producing. Fish has been reaching and reaches the tables of Italian consumers from all around the world. Nobody asks where sole, rockfish or monkfish come from.

WWF believes that an informed consumer can play a decisive role in changing fishing actions.

## **ATLANTIC BLUEFIN TUNA**

The Atlantic bluefin tuna (*Thumnus thymnus*), a symbolic species of the Mediterranean, is one of the largest and most commercially valuable species in the world. It is precisely for this reason that for decades it has paid a heavy price for overfishing and for illegal fishing, which has become widespread in the Mediterranean spawning grounds. Much bluefin tuna is caught alive and then transferred to floating cages, where it is reared and fattened to increase its price, as tuna used for sushi must be fat.



Although in recent years the stock of bluefin tuna has finally shown signs of recovery, thanks in part to the efforts of WWF, we are asking for additional standards that allow for full transparency in fattening farms, to avoid every form of illegal fishing or failure to record catch data.

#### **YELLOW FIN TUNA**

Italy is among the largest global consumers of tinned tuna, which is almost all yellow fin tuna (*Thunnus albacares*). The yellow fin tuna is subject to overfishing, particularly in the Pacific and Indian Oceans, and therefore requires urgent measures for healthy and productive stock levels to be restored.

**WWF is working** with fishermen and industries involved in the processing and sale of the stored product in order to obtain a "sustainable tuna", in particular through the MSC (Marine Stewardship Council) certification.



#### **THE MEDITERRANEAN DIET:** SUSTAINABLE FOOD

**The mediterranean diet** is acknowledged as one of the healthiest diets, for the variety of its cultural heritage, for its biodiversity and for the value of the nutritional well-being associated with it.

The traditional mediterranean diet is **rich in plant foods (grains, fruit, vegetables, nuts, seeds and olives) and has olive oil as its main source of additional fat**. It provides for a moderate to high intake of fish and shellfish, a low to moderate consumption of eggs, poultry and dairy products (cheese and yoghurts), a low consumption of red meat and saturated fat, and a moderate alcohol intake, mainly in the form of wine during meals.

The distinctive feature of this dietary model is not just the range of foods but also how sustainable they are: they are mainly fresh, local and seasonal produce, prepared according to traditional recipes, and that also express the values of the environment and the landscape in which the food is produced and consumed.



UNESCO HAS Acknowledged Mediterranean Diet has world Heritage





#### AGRICULTURE IN ITALY:

From the data of the 6th General Census of Agriculture in Italy, there are **1,630,420 farms and livestock enterprises in operation**, of which 209,996 rear livestock destined for sale. Overall, the Total Farm Area (TFA) amounts to 17,277,023 hectares and the Utilised Agricultural Area (UAA) amounts to 12,885,186 hectares. In ten years the TFA has decreased by 8% and the UAA by 2.3%. The animals that are being reared include 5.7 million cattle, 9.6 million pigs, 7.5 million sheep and goats and 195.4 million poultry. The average size of a farming business has grown, in a decade, from 5.5 hectares of UAA per business to 7.9 hectares (+44.4%).

www.politicheagricole.it www.reterurale.it

#### JUST ONE EARTH To feed the entire planet

In January 2012, WWF Italy launched the **One Planet Food programme aimed at promoting food models with a low environmental impact** and improving the relationship between food and the Planet.



For WWF, a diet is sustainable if it respects biodiversity and ecosystems, is nutritionally adequate, uses natural resources efficiently, and respects human communities according to the principle of fairness. Its many benefits are connected with the make up of its typical foods, mainly of plant origin (fruit, vegetables, grains) and to a diversified and balanced consumption of them.

A sustainable diet does not generate negative long-term effects on health, on the environment, on society and on the economy.

It is a complex challenge that requires a coordinated approach between science, citizens, businesses, policy makers, consumers' organisations and other NGOs. The One Planet Food programme is working with all of these bodies to achieve a **transition towards a more sustainable food system.** 



www.oneplanetfood.info

#### **30 coffees**

You just have to give up 30 coffees a year to become a **member of WWF**, it is a small contribution for a mighty result, and together we can change the future of the Planet.

#### By purchasing

products from the Terre dell'Oasi project (oil, pasta, honey, rice, salt) you will be contributing to the preservation of biodiversity and the agricultural landscape. Each resource will be reinvested in the management and in the conservation projects of WWF Oasis.





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#### The future

Support our conservation

projects of **wildlife species** that are at risk of extinction due

to the unsustainable management of

agriculture, livestock

and fisheries.

of the **forests** is in your hands. Vast areas are being destroyed to produce important raw materials on the domestic and international markets, such as palm oil, coffee and soya. Help us protect them.

