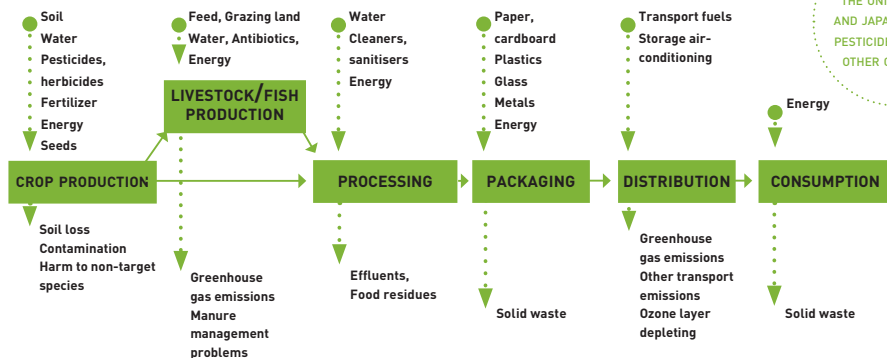


# FOOD

## feed the world without starving the planet

Food has become an issue at the four corners of the globe. Alongside escalating levels of obesity (+200% in the United Kingdom, +70% in the United States, +16% in France), 13% of the world's population are undernourished. Between these two extremes lie increasingly industrialized production, market-led strategies, and developing countries, stricken by famine, whose farmers produce more for export than for their own needs. In 2050 there will be 3 billion more mouths to feed. In accordance with United Nations objectives, the first step will be to halve the number of people who are undernourished. This objective could be reached if resources, already sufficient to feed the world's population, were shared more equally. Faced with such expanding needs, agriculture, livestock production and fishing are turning towards more intensive methods. A consequence of this race for productivity is the overexploitation of natural resources. Science and industry are working all-out to develop new techniques and increase production and yield. Fertilizers, pesticides and genetic manipulation are becoming the everyday tools of a new form of agriculture. The agri-food business, a veritable industry which produces, processes and markets 70% of foodstuffs, has a large share of responsibility for environmental damage. Over recent years though, and parallel to this industrial logic, initiatives are springing up for greener farming and equitable consumption.

### FROM FIELD TO FORK: THE IMPACTS OF THE AGRI-FOOD INDUSTRY ON THE ENVIRONMENT



Because it calls on increasingly complex processes, the agri-food industry puts substantial pressure on the earth's resources. The use of chemical substances, the development of conservation processes, and the multiple stages involved in processing foods strike a serious blow to the environment.

FRANCE, THE UNITED STATES AND JAPAN USE MORE PESTICIDES THAN ANY OTHER COUNTRIES.

→ 4 TO 6 KG

of wild fish are ground into meal to produce 1 kg of farmed fish



↓ In industrialized countries, dustbins are almost 3/4 filled with food packaging.

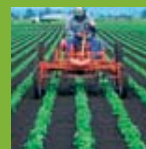


### DIFFICULTIES FOR AFRICA'S FARMERS

It is in Africa that farmers must contend with the most difficulties. Here, land is used to grow crops for export which stimulates economic growth, often to the detriment of local populations. Every measure is taken to maintain productivity. However, soil depletion, problems of water supply, the spread of AIDS, and repeated flooding due to climate change have further weakened this economic activity.

→ 12

crops, mainly wheat, rice, maize and potatoes, feed 80% of the world's population



→ 1.5

million litres of water are needed to produce 300,000 litres of soda

### GMOs: CAUTION

Research since the nineteen-forties has led to the creation of genetically-modified species that are more resistant to pests and diseases. These include maize, soybeans and tomatoes. Today, genetically-modified organisms (sterile seeds) raise the problem of cross-pollination with wild plants and maybe detrimental to biodiversity.

→ **THE PLANET**  
loses fertile land  
each year equal to  
the size of Ireland



→ **25**  
**TO 35 KG**  
of cereals are  
needed to produce  
1 kg of red meat



→ **1/4**  
of food is thrown  
away without  
being eaten



#### IDENTICAL AGRICULTURE

New agricultural technologies, GMOs and global trade in seeds are tending to take the place of local farming traditions. In Mexico for example, the Mayas used to grow maize with beans as a way of controlling parasites and optimizing yield. Now the United States are exporting their production methods and reducing centuries-old practices that are both natural and cultural.



IMPORTED BY PLANE, A STRAWBERRY BOUGHT IN EUROPE IN MARCH CONSUMES 24 TIMES MORE ENERGY THAN A LOCALLY-GROWN STRAWBERRY BOUGHT IN JUNE.

#### THE OTHER FACE OF GLOBALISATION

Madagascar might be the world's biggest producer of vanilla and one of the leading exporters of shrimps, cloves and coffee, it is still one of the poorest African countries: its farmers produce primarily for export.



## IMPACTS

#### Shrinking biodiversity

According to Birdlife International, 1 in 8 of the world's bird species is threatened with extinction as a result of uncontrolled agricultural expansion and deforestation. The increase in farmland to the detriment of grassland, forests and hedgerows has drastically reduced biodiversity. At the same time, the increased uniformity of products is eroding genetic resources: according to the Food and Agriculture Organization of the United Nations (FAO), out of some 6,300 breeds of domestic animals, 1,350 currently face extinction and 2 domestic breeds are lost every week.

[www.fao.org/biodiversity/index.asp?lang=en](http://www.fao.org/biodiversity/index.asp?lang=en)  
[www1.oecd.org/agr/biodiversity/index.htm](http://www1.oecd.org/agr/biodiversity/index.htm)  
[www.biodiv.org/programmes/areas/agro](http://www.biodiv.org/programmes/areas/agro)  
[www.ers.usda.gov/publications/agoutlook/dec1996/ao236e.pdf](http://www.ers.usda.gov/publications/agoutlook/dec1996/ao236e.pdf)  
[www.unep-wcmc.org](http://www.unep-wcmc.org)  
[www.agr.gc.ca/policy/environment/biodiv\\_e.phtml](http://www.agr.gc.ca/policy/environment/biodiv_e.phtml)

#### Less and less fertile land

Soil degradation causes a substantial reduction in the land's production capacity. Mismanaged or overexploited, almost 40% of farmland is now in a state of reduced fertility. As a result, 5 to 6 million hectares of cropland are abandoned in the world each year. Overproduction, inadequate land and water management, deforestation, desertification, the absence of crop rotation, excessive recourse to fertilizers and other chemical products, as well as the use of unsuitable



↓ Agriculture, fishing and livestock production represent a colossal market in economic terms and in terms of employment.

agricultural machinery are some of the main causes behind this decline in quality.

[www.ecaf.org](http://www.ecaf.org)  
[www.fao.org/docrep/W2598E/w2598e06.htm](http://www.fao.org/docrep/W2598E/w2598e06.htm)  
[www.gov.on.ca/OMAFRA/english/engineer/facts/87-040.htm](http://www.gov.on.ca/OMAFRA/english/engineer/facts/87-040.htm)  
[www.ars.usda.gov/research/programs/programs.htm?np\\_code=202&docid=847](http://www.ars.usda.gov/research/programs/programs.htm?np_code=202&docid=847)

WHETHER FOR THE PROCESSING, TRANSPORTATION OR DISTRIBUTION OF FOODS, THE AGRI-FOOD BUSINESS CONSUMES UP TO 15% OF ALL THE ENERGY PRODUCED IN INDUSTRIALIZED COUNTRIES.

#### Contaminated water

Agriculture is the biggest consumer of water in the world: it uses three-quarters of resources. In the race to produce more, chemical products have become the norm. Between 1972 and 1988, fertilizer use grew by an annual average of 3.5% in the world. Each year, over 4 million tonnes of chemical products find their way into nature. While some countries regulate their application, elsewhere fertilizer and pesticide use continues uncontrolled. In 1995, 16,500 tonnes of undesirable or banned pesticides were inventoried in 49 African and Middle Eastern countries. They can be traced in soil, neighbouring crops and, most of the time, in groundwater and bodies of water. One example of their impact: a concentration of nitrates leads to eutrophication (the proliferation of algae which asphyxiate aquatic species), a problem that also concerns countries in the North such as France, the Netherlands and the United States.

[www.fao.org/docrep/003/t00800e/t0800e0a.htm](http://www.fao.org/docrep/003/t00800e/t0800e0a.htm)  
[www.un.org/documents/ecosoc/cn17/2000/ecn172000-7add3.htm](http://www.un.org/documents/ecosoc/cn17/2000/ecn172000-7add3.htm)

#### Poisoned food

Pollution from agricultural activity and the use of various pesticides have repercussions on health, including acute intoxications and chronic effects, cancers and diseases caused by the transmission of pathogenic agents in manure through water. The food we eat can also be a danger to human health, in particular if it contains certain quantities of heavy metals or others that are harmful to the body, such as lead. Vegetables are most likely to contain record concentrations of chemical products (for example nitrates).

[www.epa.gov/superfund/programs/lead/health.htm](http://www.epa.gov/superfund/programs/lead/health.htm)  
[www.who.int/ipcs/en](http://www.who.int/ipcs/en)  
<http://vm.cfsan.fda.gov/~lrd/pestadd.html>  
[www.hc-sc.gc.ca/food-aliment/e\\_index.html](http://www.hc-sc.gc.ca/food-aliment/e_index.html)

## ON THE RIGHT TRACK

All around the world, alternatives to industrial agriculture are springing up: organic farming, international conventions, local structures that bring together the rural and the urban worlds, and the revival of ancestral techniques are among the most noteworthy initiatives in this field.



↓ To avoid spreading pesticides and insecticides, integrated biological pest control introduces animal or plant species to prevent invasions of parasites. Ladybirds eat cochineals, hedgehogs make a meal of caterpillars, slugs and mice, and nasturtiums attract greenfly away from other plants.

### → The Rotterdam Convention

UNEP and the FAO have joined forces to curb the use of agro-chemicals. This cooperation led to the adoption, in 1998, of the Rotterdam Convention on trade in these hazardous substances, which can have a very serious impact on health and the environment. Henceforth, any country that imports these chemical products must give its prior informed consent before they can cross its borders. The purpose of the convention, which currently covers 27 pesticides, is to protect countries that lack the knowledge and equipment required to safely manage these substances.

[www.fao.org/ag/magazine/0205sp2.htm](http://www.fao.org/ag/magazine/0205sp2.htm)

### → Organic farming

Organic farming is a means of production that respects ecological balance and farmers' autonomy. Its distinguishing features are the absence of synthetic chemical products, recycling of organic substances, crop rotation, and biological control of pests and diseases. Livestock production, extensive rather than intensive, makes use of alternative veterinary treatments and respects animal welfare. Today, organic farming has been adopted in a hundred or so countries and covers almost 24 million hectares. The top three countries with the most organic farmland are Australia, with 10 million hectares, followed by Argentina (3 million) and Italy (1.2 million).

[www.offr.org/research/index.html](http://www.offr.org/research/index.html)  
[http://europa.eu.int/comm/agriculture/qual/organic/index\\_en.htm](http://europa.eu.int/comm/agriculture/qual/organic/index_en.htm)  
[www.gks.com/library/transition.html](http://www.gks.com/library/transition.html)  
[www.epa.gov/agriculture/torg.html](http://www.epa.gov/agriculture/torg.html)



↓ Belle des Brunetières, Markkichta Gehesia, Noir de Tartarie for cherries; Esperanza, Frida and Haida for raspberries: these are just some of the heritage of fruit varieties. Few are well-known and even fewer find their way to market. And yet their diversity and rusticity mean they adapt to different physical and climatic conditions, and are resistant to disease.



### → Community-supported agriculture

Consumer groups, agricultural organizations, environmental groups and elected representatives work hand-in-hand to promote quality products and the development of environmentally-friendly agriculture. These structures encourage measured, and nine times out of ten, organic production that involves a wide variety of species. Such schemes often include projects to assist persons in difficulty and bring them back into the community. One noteworthy initiative invites consumers to place advance orders for produce; thanks to this system, farmers no longer produce surplus to requirements.

[www.nal.usda.gov/afsic/csa](http://www.nal.usda.gov/afsic/csa)  
[www.biodynamics.com/csa.html](http://www.biodynamics.com/csa.html)

### THE DIFFERENT TYPES OF AGRICULTURE

Farming takes on different forms around the world, and each method brings its own results and specificities. For example, intensive agriculture gives high yields and consumes large amounts of fertilizer and pesticide; organic farming prohibits chemical products; bio-dynamic agriculture works with the energies of life-forces, while hydroponic farming replaces soil with water as a growing medium. [www.geog.ouc.bc.ca/conted/onlinecourses/geog\\_210/210\\_4\\_11.html](http://www.geog.ouc.bc.ca/conted/onlinecourses/geog_210/210_4_11.html)

### QUALITY LABELS

The majority of countries have developed their own labels as a guarantee of quality in the food sector. Standards, specifications and declarations are a means of evaluating their worth.



### PUTTING IDEAS INTO PRACTICE

#### Individuals

→ PREFER SHORTER DISTRIBUTION CIRCUITS AND LOCAL TRADERS TO SUPERMARKETS  
 → SUPPORT FAIR TRADE INITIATIVES → BUY PRODUCE IN SEASON → CHOOSE PRODUCTS WITH THE LEAST PACKAGING → BUY NO MORE THAN NEEDED → STUDY LABELS AND CHECK THE PRODUCT'S ORIGIN → ASK THE SHOPKEEPER FOR FURTHER INFORMATION  
 → ADOPT A HEALTHY, BALANCED DIET



#### Companies in the sector

→ EXAMINE PRODUCTS' LIFECYCLE (SEE "ECO-DESIGN") → FOR EACH STAGE, DEVELOP A CODE OF GOOD CONDUCT TO REDUCE CONSUMPTION OF WATER, ENERGY AND CHEMICALS, AND TO CUT DOWN ON TRANSPORT AND PACKAGING → PUBLISH ENVIRONMENTAL REPORTS TO PUBLICLY COMMIT TO AND REPORT ON IMPROVEMENTS IN ENVIRONMENTAL PERFORMANCE

#### Local authorities and/or companies

→ PROPOSE MORE ORGANIC FOOD IN CANTEENS AND COMMUNAL RESTAURANTS  
 → PROVIDE INFORMATION ON PRODUCTS' ORIGINS  
 → OPEN ALLOTMENTS → DEVELOP ACTIVITIES THAT WILL GIVE CHILDREN INSIGHT INTO FARMING, FISHING AND LIVESTOCK PRODUCTION → MAKE SPACE FOR VEGETABLE PATCHES IN PARKS AND GARDENS  
 → HELP FARMERS DIVERSIFY THEIR ACTIVITIES (BED & BREAKFAST, FARM HOLIDAYS) → INFORM ON THE NUTRITIONAL QUALITIES OF MENUS





### FAIR TRADE

The story of fair trade began in the nineteen-sixties in the United Kingdom and the Netherlands under the impetus of non-governmental organizations. Now having spread to all western countries, this equitable system is not motivated by maximum profit but by respect for human rights, for the environment and the quality of its products. Prices are set that will enable producers and cooperatives to better provide for their fundamental needs (healthcare, education and housing) and to invest in their community's future. Fair trade cuts out the intermediary. In return, the producer is committed to supplying a quality product, respecting International Labour Organization standards, and investing part of proceeds from sales in development projects. Fair trade has the vocation to become an alternative to traditional international trade and re-establish the balance between North and South.

[www.eftafairtrade.org](http://www.eftafairtrade.org)  
[www.fairtrade.net](http://www.fairtrade.net)

### FIND OUT MORE

Food and Agriculture Organization of the United Nations, Agriculture Department:  
[www.fao.org/ag](http://www.fao.org/ag)

New agriculturist:  
[www.new-agri.co.uk](http://www.new-agri.co.uk)

International agricultural center:  
[www.iac.wur.nl](http://www.iac.wur.nl)

International Food Policy Research Institute:  
[www.ifpri.org](http://www.ifpri.org)

Livestock, Environment and Development (LEAD) Initiative:  
[www.virtualcentre.org/en/main.asp](http://www.virtualcentre.org/en/main.asp)

Agriculture and Agri-Food Canada:  
[www.agr.gc.ca](http://www.agr.gc.ca)

The FAO and organic farming:  
[www.fao.org/organicag](http://www.fao.org/organicag)

Aquastat, FAO's information system of water and agriculture:  
[www.fao.org/ag/agl/aglw/aquastat/main/index.stm](http://www.fao.org/ag/agl/aglw/aquastat/main/index.stm)

Network on rural development and food security: [www.rdfs.net](http://www.rdfs.net)

Sustainable agriculture research and education:  
[www.sare.org/index.htm](http://www.sare.org/index.htm)

Global Crop Diversity Trust: [www.startwithaseed.org](http://www.startwithaseed.org)

Alliance for better food and farming: [www.sustainweb.org](http://www.sustainweb.org)

New agriculturist: [www.new-agri.co.uk](http://www.new-agri.co.uk)

### → The waru-waru system

In the Puno district of southern Peru (between 3,800 and 5,000 m above sea level), prone to frequent drought, flooding and frosts, development workers and farmers have revived a 3,000-year-old indigenous farming system. Abandoned in Incan times it was rediscovered by archaeologists. The system, known as *waru-waru*, uses raised platforms of soil separated by ditches to collect and conserve water, extract salt, and create a warm and beneficial microclimate for the crops. To date farmers have converted over 7,000 hectares to *waru-waru* to grow potatoes, quinoa and barley. Their per-hectare potato yields range up to 10 tonnes, and per capita incomes have more than doubled. *Waru-waru* is an example of what the FAO calls Globally-important Ingenious Agricultural Heritage Systems (GIAHS), which "*build on natural ecological processes rather than struggling against them*". Now, in conjunction with different partners, the FAO aims to promote international recognition, conservation and sustainable management of GIAHS. [www.fao.org/ag/magazine/0211sp1.htm](http://www.fao.org/ag/magazine/0211sp1.htm)  
[www.fao.org/ag/agl/agll/giahs/projsum-e.stm](http://www.fao.org/ag/agl/agll/giahs/projsum-e.stm)

### → In favour of sustainable farming

The leading names in the agri-food industry, among them Danone, Nestlé, Unilever, Findus, Kraft and McDonald's, have created a platform to support and promote worldwide the development of sustainable agriculture, in collaboration with the different stakeholders of the food chain. The Geneva-based Sustainable Agriculture Initiative Platform (SAI Platform) defines sustainable agriculture as "*a productive, competitive and efficient way to produce agricultural products, while at the same time protecting and improving the natural environment and social/economic conditions of local communities.*" [www.saiplatform.org](http://www.saiplatform.org)



### → Codex Alimentarius

The Codex Alimentarius Commission is a bipartite organization of the FAO and the World Health Organization (WHO) whose vocation is to satisfy the food requirements of the world's population. Its objective is to protect the health of consumers and to promote fair practices in the international food trade. The commission refers to scientific evaluations to define standards for the security and quality of food products. These standards concern aspects of food hygiene, nutrition and labelling as much as questions of quality. Codex brings together 169 member states. [www.codexalimentarius.net](http://www.codexalimentarius.net)



## AT UNEP

### → A SUSTAINABLE DEVELOPMENT WEBSITE

UNEP has set up a website about the problems and key issues related to the agri-food industry.

Platform for discussion, training and sharing of experience, its aim is to help companies and organizations implement sustainable agricultural programmes that reflect the principles set out in Rio.

[www.agrifood-forum.net](http://www.agrifood-forum.net)