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2014



THE RIGHT FOR PEACE

— IN A SUSTAINABLE PLANET —

ABSTRACT HUMAN RIGHT DOSSIER

Edited by Lorenzo Luatti

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Introduction

By Lorenzo Luatti - Oxfam Italia – Senior Policy Officer

AA.VV., *The Right for Peace in a Sustainable Planet*, Tuscany Region, Oxfam Italia, Firenze-Città di Castello, 2014, pp. 208 (online on www.regione.toscana.it, please see the page dedicated to Human Rights Meeting)

What do “sustainability” and “sustainable development” mean? Which and how many meanings do these expressions have, and what changes did they have over time? What do international, European and national rules state? Which are the connections among sustainability, environmental and food issues, and right for peace? Which are the present challenges that people have to face?

The 18th edition of Book-Dossier on human rights tries to give some answers to these and other questions, encouraging young and adult people to make reflections and analysis, through a didactic approach and a simple and accessible language.

More than 20 authors, among researchers, journalists and national and international operators, have contributed to the book realization. The book, composed of 208 pages, consists of four parts.

In the first part, CESPI scientific director Marco Zupi, together with some researchers of Dirpolis Institute (Sant’Anna School in Pisa) – coordinated by Professor Emanuele Rossi – and some French and Croatian researchers, try to clarify the different terminological and conceptual meanings of “sustainability”, and give a historic, legal and theoretical explanation of sustainability and sustainable development.

In the second part, WWF Italia and Fairtrade scientific directors – Gianfranco Bologna e Giorgio dal Fiume – explore the different connections among “sustainable development” and environmental and food issues, sustainability, human rights, productive systems and biodiversity.

The third part contains an in-depth analysis: reflections, good practices, experiences and reports, which describe recycling, waste, sustainable cities, overpopulation, land grabbing, etc.

The last part gives readers, teachers and educators some advice to realize a variety of didactical activities on the theme, a huge biblio-webliography, a project description and makes them aware of the initiatives taken by the project partners.

Environmental sustainability: planetary boundaries and resilience

By Gianfranco Bologna - WWF Italy scientific director and general secretary of Aurelio Peccei Foundation (Rome, Italy)

Sustainability imposes upon people a real cultural change

In the first chapter of the report *State of the World (Is sustainability still possible?)* Bob Engelman, President of Worldwatch Institute, writes: “*The era in which we live is a sustainablahblah one, a cacophonous profusion of the term ‘sustainable’ that defines something better from the environmental point of view or something newest*” (Worldwatch Institute, 2013).

The adjective - which initially means ‘able to continue to live without any interruption or decrease’ – dates back from the Ancient Romans era. It was firstly used in the environmental domain after the publication of *Our Common Future* (1987), a report written by World Commission on Environment and Development (1988). As declared by prime Norwegian minister Gro Harlem Brundtland and colleagues, the sustainable growth “*fulfils the present needs without compromising the possibility of the future generations to satisfy their own needs*”.

For several years after the report publication, environmental analysts have discussed about complex terms such as “sustainable”, “sustainability” and “sustainable growth”. It was at the beginning of the millennium that these terms acquired their own meaning, without imperatively corresponding to the definition given by the Commission. Thanks to an increasingly popular spread, the word “sustainability” seemed to become a synonym of the adjective “green”, vague and elusive, which alluded to an environmental value that was difficult to define, in terms of “green growth” or “green works”.

Nowadays, the word “sustainable” is often associated to the greenwashing society that some companies put to use. Words like “sustainable planning”, “sustainable cars” and even “sustainable underwear” rage among the media. An airline company guarantees, “*The cardboard we use originates from a sustainable source*” for the passengers, while another one informs that a new sustainable initiative saved the aluminium in 2011 “*to produce three new planes*”. Both the employments do not say if the total activity of the airlines – or the air transport sector – could be supported for a long time.

Even nowadays, in ordinary usage, the word “sustainability” is not clear and can create confusion; this occurs despite the huge progress of several disciplinary domains in scientific knowledge involved by sustainability; a real Sustainability Science has been created, and people have dedicated some important international conventions to it.

Sustainability is a complex and articulated concept that, as people always notice, is often trivialized. It is complex and has many objective difficulties with realizing concrete actions, behaviours and policies – that are able to put it into practice – and with changing the strict mental and cultural models that dominate today; therefore, this causes a big confusion that does not facilitate its correct definition.

Many people think that “sustainability” simply means to reduce the gas emission that modifies the atmosphere chemical composition, which increases the natural greenhouse effect, causing the present climate overheating. Other people think that recycling is sufficient to satisfy sustainability. Further people think that it is necessary to eat less meat or to buy a low energy consumption car in order to be “sustainable”.

It is obvious that all these examples can be considered as important ways to reduce their own impacts on the earth, trying to obtain a lifestyle that is more sustainable than the present one. All these facts contribute to sustainability. On the other side, it is necessary to be aware that sustainability does not consume in one or more significant simple actions.

Sustainability imposes upon people a real cultural change. Sustainability is composed of several parts that should be always kept connected: this constitutes an important challenge to people’s way of thinking – which usually works through simple logics of cause and effect – and to their consequent behaviours.

In fact, sustainability is:

- An important challenge to people’s knowledge, comprehension and innovation skills;
- A combination of scientific knowledge and inter-disciplinary culture that represents a fascinating crossroad of innovative knowledge, which derives from many different always-evolving disciplines;
- An important challenge to the awareness of the complex relationships between human beings (with their problematic industrial and technological societies) and mother nature, which is essential for life;
- An important challenge to people’s capacity to follow different paths from which they have been used to for decades;
- An important challenge to people’s cultural schemes, to the way they created and arranged them, and to their capacity to plan new ones.

In order to simplify the concept with one mere definition, it can be affirmed that sustainability means to learn and live in a prosperity that is fair and shared by every other human being, within the physical and biological limits of the only planet they can live in: Earth.

Human rights and environmental sustainability

A new volume about the updates of our wonderful planet, made by Geological Time Scale, was published at the end of 2012. It is the most respected realization of geological researches about Earth chronology and its codification in eons, eras and periods. The final chapter of this volume (Gradstein et al, 2012) is written by three important science philosophers, Jan Zalasiewicz, Paul Crutzen and Willy Steffen, and dedicated to Anthropocene, the new geological period that international scientific community wants to make official, in order to demonstrate that human intervention on nature is equal to the intervention of those geophysical forces that have modified the Earth during its 4.6 billion years-life (please visit www.anthropocene.info).

Human race has begun to conduct an experiment on the planet, but the result is still unknown and has big implications for all the living species on Earth, for human beings' lives and for the future of human society.

Nowadays, we know that human beings have applied such a pressure on natural systems, that many fundamental variables (those referred to climatic system, water cycles, biodiversity richness, biogeochemical cycles – carbon, nitrogen and phosphor – air purification and soil regeneration) are going, or have already gone, beyond the limits of the last 10.000 years, a period in which human species flourished and spread on the planet, growing in numbers, until it has reached 7 billion (verified in 2011).

The scientific community in charge of GEC (Global Environmental Change) can affirm that this pace is not sustainable in the near future. It is clear that the rate and dimension of environmental anthropogenic changes are causing some situations that people cannot control or adapt to, as the global programme of Future Earth, Research for Global Sustainability states (please visit www.icsu.org and www.futureearth.info).

Sustainability Science, a new and very innovative discipline, was born in the last few years. It is a sort of real integration among several disciplines, able to combine the continuing progresses of physics, chemistry, biology, geology, ecology and social sciences with unprecedented disciplines, such as ecological economy, conservation biology, industrial ecology, etc. (please see Clark, Dickson, 2003; National Research Council, 1999; Reitan, 2005).

The international scientific community, which studies the global environmental change and which effects it has on ecological and social systems, has been studying for a long time how our impact is close in order to reach tipping points; beyond those tipping points the effects can be really unmanageable and devastating for humanity, leading to a threshold effect. For this reason, researchers venture and talk about planetary boundaries, which human intervention cannot go beyond, penalty several really negative and dramatic consequences for all the social systems (Rockstrom et al, 2009a e 2009b; more recent v. Rockstrom e Wijkman, 2014).

The main target of these studies is to reveal a safe and operating space for human beings.

There are nine planetary boundaries: climatic change, oceans' acidification, ozone layer's reduction in the stratosphere, biogeochemical cycle modification of nitrogen and phosphor, global use of water, use of soil changes, biodiversity loss, atmospheric aerosol diffusion, pollution due to anthropogenic chemical products.

As for climate change, biodiversity loss and nitrogen cycle (some researches added phosphor cycle, too) the present situation is beyond the limits noted by scientists.

Scientific debate, together with practical applications of planetary boundaries, has spread more and more around the international politics, crossing with social thoughts. Kate Raworth, senior researcher at Oxfam and professor at Environmental Change Institute at Oxford University, got

back some works and reflections about planetary boundaries and extended the subject to their social basis, giving a further contribution to define a safe and fair space for humanity (Raworth, 2012).

Overall, in Raworth's opinion, the nine planetary boundaries can be conceived as the integral part of a circle, and then people can define an area like an "operating space that is safe for human beings" and imagine it in a visual way.

The concept of planetary boundaries underlines properly the complex scientific issues to a large audience, questioning the traditional concepts about how economy relates to environment. While traditional economy deals with environmental decay as an "externality" that falls back out of a monetized economy, science philosophers have literally undermined this approach by suggesting a set of limits quantified by the use of those resources within which global economy should operate, if people want to avoid touching the Earth's points of no return. Such boundaries are not described in money terms, but in ecological ones, which are fundamental in order to guarantee a planet resilience that maintains a condition similar to what happened during the Holocene era, which allowed the human society to flourish.

Not only human welfare does certainly depend on how the resources that used are maintained, but also on the necessities of human beings to have some resources in order to live a respectable life, full of opportunities. International rules on human rights have always supported a moral right for every individual to have fundamental resources, such as food, water, medical treatment, and education, freedom of speech, activism and personal security. Just as there is an external boundary out of resources' use, which is a "roof" that delimitates environmental decay, so there is an internal boundary in the resources' collection, which determines a "basic social level" under which human deprivation is unacceptable.

Certainly, such a basic social limit can guarantee only primary human needs. Considering the actual rate of poverty and the extreme inequality all over the world, a common basis of human rights should be guaranteed and considered as a priority.

The most important priorities are 11: food, water, medical treatment, income, education, energy, work, freedom of speech, gender equality, social equality and shock resilience. Raworth considered these 11 priorities such as the essential basis for human life, together with planetary boundaries. In that way, between basic rights and planet boundaries' environmental roofs, a donut-shaped belt is created, which can be defined safe for the environment and socially fair for humanity. In this domain, the socio-ecological systems' resilience – which should not pass the planetary boundaries' roofs nor the social basis' floors – starts to move on.

These "steps" would cause the socio-ecological systems' resilience to weaken, increasing their vulnerability rates. This analysis is commonly referred to as Doughnut Economics, where planetary boundaries are the donut external part, while social boundaries are its inner part.

Combining planetary boundaries with social boundaries of that kind, the consequence is a new perspective of sustainable development. Human rights promoters underlined the importance of promising any human being the strictly necessary to live, while ecological economists concentrated

on the need to place global economy within ecological limits. This area derives from the combination of the two aspects and determines, as a result, an area that respects both human rights and environmental sustainability; it also recognizes the existence of complex dynamic relationships among several boundaries.

People cannot believe that economy is separated from nature anymore. Economy has inspired a human behaviour that has not considered the big value of nature, nor has understood the gravity of human intervention on nature, which is paradoxically justified by the same approach of the typical economic policy. People live in an epoch where their knowledge continuously moves on and where culture and behaviours are not able to handle unrests, uncertainties and instabilities. It is necessary to know that the living systems cannot be completely controlled and understood and that it is fundamental to have humility in front of the unknown, giving life to flexible, precautionary and resilient planning mechanisms.

Resilience and vulnerability

During the 40 years between the United Nations first big conference about human environment – occurred in Stockholm in June 1972 – and ONU Conference about Sustainable Development – occurred in Rio de Janeiro in June 2012 (visit www.uncsd2012.org and <http://sustainabledevelopment.un.org>) – while the concept of sustainability has developed, together with some real big progress on the comprehension of our planet's ecosystem wealth and of relationships between ecological and social systems, policies and actions led to a sustainable development have started all over the world even thanks to new technologies, such as remote sensing satellites and supercomputer.

They are very admirable knowledge progresses and very innovative concrete actions, but they are in a very modest quantity in comparison with the big challenge people have to face.

Applying sustainability in a concrete way is a real conceptual and operating challenge for present cultural and mental frames that have strengthened during the cultural evolution, mostly in rich and industrialised countries, from Industrial Revolution to the present days.

In fact, this is a challenge that questions all the economic development models that have been used until now and their cultural basis, centred on consumer lifestyles; it touches several aspects and disciplines of human knowledge and makes people face reality with completely new points of view. The main objective of sustainability is, in fact, to apply those models of social and economic development that are able to allow people's existence within natural systems' boundaries (Bologna, 2008 and 2013).

Socio-ecological systems are very complex; knowledge approaches to complexity trying to search all the assumptions and behaviours that emerge from those systems, and concentrating more on the interconnections and systems structure than on their own components. It is more a significant

change of orientation and a scientific approach than a new scientific branch. Traditional science bases on a reductionist way of thinking: if people know all the factors that contribute to create a situation, then it is possible to foretell the result, and vice versa. On the other side, it is easy to realize that people are facing a new situation for a cellule, for ecosystem or socio-economic dynamics, where to know the properties of every single element is not enough to describe the structure in its whole (visit www.santafe.edu).

This approach makes it possible to analyse, comprehend and face reality in a new way. Physician Robert Laughlin, Nobel prize for physics in 1998, wrote: *“Although I am against the abuse of the Era concept, I can affirm that science has already passed from the reductionism Era to the emergency Era, an historical period where searching the ultimate causes of phenomena turns into something else. It is a passage from studying the single parts to studying collective behaviours.”* (Laughlin, 2005)

Resilience is very important and is more and more popular and used in different disciplines. It concerns the capacity of a system (ecological, social, human being, etc.) to face problems in a positive way and to come back to its precedent condition. In this sense, resilience could be similar to resistance, even if, when resilience acts in the sustainability domain, it has a bigger significance. There are many research centres and an extraordinary international coordination – dedicated to resilience – with many important scientific institutes and universities (please visit www.resalliance.org).

The ecological concept of resilience was firstly introduced by Crawford Holling in the 70's, and it defines the capacity of SES (Social-Ecological Systems) to absorb troubles and to reorganize themselves during the transformation, so that they maintain the same functions, structure, identity and feedbacks. It is clear that these systems can evolve in multiple states, which are different from the previous ones and maintain the vitality of functions and the structure of the systems themselves.

Holling affirms that it is possible to measure resilience according to the trouble entity that can be absorbed before the system changes its structure, variables and processes that control its behaviour. An ecosystem resilience is its capacity to bear a trouble without collapsing into a different qualitative status. The less resilience, the more vulnerability. For this reason, to handle social-ecological systems means to maintain a high level of resilience and a low one of vulnerability. Vulnerability can be considered the opposite concept of resilience; it occurs when an ecological or social system loses its resilience and becomes vulnerable to the change that could be previously absorbed.

Change can create development, newness and innovation in a resilient system, while in a vulnerable system even little changes can be devastating. Vulnerability means to incline to a Social-Ecological System, to suffer from stresses and external shocks: the less resilient the system is, the less capacity institutions and society have to adapt and face new changes.

To put sustainable policies into practice means to learn how to handle uncertainty, to adapt to changing conditions and, most of all, to keep ecological and social systems more resilient and less vulnerable.

As considered until now, people live in a world where human beings play a fundamental role in changing biosphere processes, from a genetic scale to a global one. It is important to lessen human impact on natural systems and be able to adapt to new situations, with learning skills and flexibility. Those sustainable policies, based on the best transdisciplinary scientific knowledge, should become a priority. In fact, if this did not happen, environmental, economic and social cost would be very high. Sustainability and resilience are strictly connected and they influence what people should do about politics, governance and ecological-social systems.

The researches that have been carried out until now show how enquiries on resilience bring people to new fields, transdisciplinary situations, in-depth challenging analysis of the relationships between social and ecological systems, and make people investigate the effects of local and global changes that are produced by human intervention on the ecological systems' natural evolution. It is clear that everybody could be able to start significant routes – aiming to reach a sustainability of our welfare and development – by reinforcing people's basic knowledge by making it interdisciplinary, flexible, innovative and open to be contaminated by other fields of knowledge.

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For researches on complexity, visit www.santafe.edu, the most advanced international research centre on complex adaptive systems. Resilience Alliance (www.resalliance.org) forms a scientific alliance among different influential organizations, universities and institutions; it was born at the end of the 90’s and was inspired by the important ecologist Crawford (Buzz) Holling. It started a very interesting journal that is available free on the Internet and scientifically refereed, “Ecology and Society” (previously named “Conservation Ecology”) whose aim is to collect considerations, analysis and researches intended to resilience and sustainability (www.ecologyandsociety.org). Prestigious Stockholm Resilience Institute has existed for some years in Stockholm, and Johan Rockstrom and Carl Folke run it (www.stockholmresilience.org).

Please visit Future Earth Research for Global Sustainability site, originated from the previous site Earth System Science Partnership, all sponsored by International Council of Science (ICSU); visit also www.icsu.org and www.futureearth.info.

See also scientific journals:

- “Current Opinion in Environmental Sustainability”
http://www.elsevier.com/wps/find/P09.cws_home/cosustnews
- “Ecology and Society”
<http://www.ecologyandsociety.org>
- “Sustainability Science Journal”
<http://www.springer.com/environment/environmental+management/journal/11625>

The many facets of food sustainability¹

By Giorgio Dal Fiume (Università degli Studi di Bologna, World Fair Trade Organisation – Europe President)

Safety, supremacy and food sustainability

Despite international rules are commonly used in international debates in order to fix criteria and domains of safety, supremacy and food sustainability, they do not exist. That is the case of Food Security. This term means the possibility of constantly guaranteeing water and food that human body needs to live and survive. The most popular definition was given during the World Food Summit, organised in Rome in 1996 by FAO (Food and Agriculture Organisation): Food Security describes a situation where *“everybody, in every moment, has a physical, economic and social access to adequate, safe and nourishing food, which satisfies people food needs and preferences, in order to live a healthy and active life”*.

Food Security has a precise profile: if it concerns food, it involves everything that makes people and communities access to food; if it concerns health, it involves food hygiene in order to avoid damaging health; if it concerns economy and society, it involves the great number of people (FAO reports around 840 million people) who suffer from hunger and malnutrition. Therefore, Food Security is the whole of policies and practices that are necessary to cover the food needs of populations “from a crop to another”, in order to avoid starvation, malnutrition and famine.

As for “Food Supremacy”, it can be considered as a sort of Food Safety “political” evolution. It was defined during the FAO Forum in 1996, but was actually conceived and promoted by a variety of civil society associations that work on agricultural issues, and by the international organisation “Via Campesina”, which gathers many farm associations all around the world. At the beginning, Food Supremacy involved *“the rights that people have to define their own policies and sustainable strategies for producing, distributing and consuming those foods that guarantee the right for nutrition to the whole population”*. Its approach is not theoretical, since it derives from the experience gained by many farm associations, which suffered from the marginalization and the unsustainability caused by farm policies and international firms led by few powerful groups. Those groups control the global food market, together with the production and the commerce of the main factors of food production, such as seeds of the main productive varieties, or the phytosanitary products that relate to agriculture. It is quite obvious that Food Supremacy has a “critical” and proactive intent: to claim a right for those people who produce food to take part – as protagonists – in defining and realizing agricultural and food policies – going beyond the market and transnational firms’ needs – in order to let rural communities, farmers and local institutions be able to decide their own food and productive system.

Making a comparison with the “Food Sustainability” definition, it is clear that Food Supremacy is the closest aspect to the object of this report; it could seem that switching “Sustainable Food” with “Food Sustainability”, there is no difference in concepts. It is partly true. FAO defines sustainable models as those models that have a low environmental impact and contribute to a food safety and a healthy lifestyle for the present and future generations. Therefore, nutrition is sustainable when it respects biodiversity and ecosystems, and is acceptable and accessible to everybody. It is clear that these contents agree with the meaning of Food Sustainability.

¹ This article is a reduced version of the volume “The Tight for Peace in a Sustainable Planet”, Tuscany Region, 2014.

Consumer responsibility

It is fundamental to explain what said before, in order to prevent a mental block in front of such a complexity, which runs the risk of making the concrete meaning and the Food Sustainability less comprehensible. The best way to act it is to think of what we are going to eat for dinner tonight. As for sustainability policies, people always imagine the cities full of smog, the pollution produced by big industries, waste, deforestation, climate change... Who would think about that in front of a table loaded with food and drinks? Who would think of an everyday product that comes from faraway places, such as coffee, bananas, and cocoa/chocolate? Yet our table is directly linked to the general theme of “sustainable development”, in the same way that Food Sustainability influences what we eat. It is inarguable that everybody, as a consumer, is responsible for his own choices. The reason is very simple: what people eat is the result of a supply chain with spill over effects on their health, economy, populations of other continents and on the environment as well.

This phenomenon is strictly connected to the strong and persistent global, economic and social differences. Considering that – according to Onu – there will be around 9 billion people by 2040, that there are dramatic data connected to the ongoing climate change, that there are great difficulties in realizing efficient solutions (2014 has been the second hottest year since 1878) it becomes clearer that Food Sustainability is vital for the whole sustainability of the planet and for pursuing peace.

The new aspect of Food Sustainability is that it evaluates the sustainability of our dinner, not only by evaluating the impact on our health (and on producers’ ones), on the environment and biodiversity, but even on the complex processes of the productive and commercial system, on the phases that have determined the product final prices, on working conditions, on the powers and dynamics that allowed the food I am eating now to be produced in a certain part of the world rather than in another.

On one side, people can focus more on the processes that have an asparagus produced in Chile to be sold in Italy during winter, on the great importation of Chinese tomatoes, on the tomatoes of South Italy that are sold in the sub-Saharan African markets; on the other side, they can focus on the resulting environmental and social effects. In many contexts, people consider it necessary to think about Food Sustainability and to identify all the implications connected to human nutrition and those social, economic and productive choices that are able to make the whole process effectively sustainable. This allow to summarize all that as Food Sustainability.

Food Sustainability is food being ecologically compatible, economically efficient, socially fair and culturally acceptable. To be sustainable means to answer the question “*how long can an action, a production or a system that depend on human, economic and natural resources, last?*”. These processes will last as soon as they can regenerate the resources they use: this is true even for agriculture and food production.

Our culture has always prioritised economic sustainability, paying little attention to the environment and society. Food Sustainability helps people to leave this intellectual anguish, and encourage them to observe the external reality through a lens that identifies all the connections, interdependences and flows that we cannot feel. There are many questions: which are the environmental consequences of what people choose to eat? Are there any alternatives – without renouncing food quality and taste? These questions help to know that Food Sustainability is fundamental, not only because what people eat is part of the “food system” they sometimes complain about, but even because Food Sustainability wants to make them aware that on the other side of the chain there is a global agricultural system that can strongly affect both the conditions of the planet they live, and what the sandwich they eat is made of.

Consuming food is apparently insignificant: buying a hamburger in a fast food, drinking coffee at an automatic machine or in a bar, eating an apple, requires simple choices and very little time. The processes that have made that food available have required a lot of time and many steps. All the food people decide to buy is the result of a long sequence of events that begin with the production of raw materials and goes on with packaging, distribution to wholesalers and retailers, consumption; the process does not end with food digestion, but it involves garbage disposal and recycling – if possible.

All the numerous processes and materials involved in producing a sandwich, for example, include the most part of the economy and agriculture sectors, means of transport, energy production, packaging, marketing and waste management. In the early 90's, a study led by Wuppertal Institute (Germany) showed how complex the ordinary food production process is. The research stated that the whole shifting needed to make all the ingredients and components of a strawberry yogurt pot have scored 7.857 Km (almost in Germany) in order to produce and to have the yogurt arrived in a supermarket in Stuttgart.

Productive systems and food diet

Now I can deal with some specific contents of Food Sustainability, in order to present its profile and some characteristics that are not generally associated with nutrition. During the XX century, the developed and industrialised countries have faced many changes in the productive, commercial and food system, as for people nutrition, productive industry and workers' socio-economic conditions.

These are substantial changes: products, taste and flavour, menus compositions have changed! A research made by INSEE-France in 2008 stated that in the last 50 years, homemade food production costs have halved from 25% in 1960 to 12% only in 2006. Half of these costs is formed by food that people consume between meals (cheese, cakes, fruit, bread...). Only the other half of food is consumed at lunch/dinner. The number of meat, fish, vegetables and transformed products has redoubled (41% in 2006) at the expense of those products that require more manufacturing and processing time. Fish has almost replaced meat and eggs. Products made of precooked and ready-to-use potatoes and vegetables have partly replaced fresh vegetables and starch-based food. These data make understand that, although people change their food habits because they are influenced by cultural aspects and relationships among populations, these changes – that are not real for new generations, since it represents the “normality” – are not the simple consequence of a spontaneous taste evolution, since they have occurred at a velocity and extent never known in the last centuries.

This suggests that something new has made these changes possible. This “new” is the structural integration of markets and agricultural productive industries, and the following important changes of those productive systems that underlie the food people consume daily.

Not only in the European cities are people in contact with the effects of this evolution, but they often do not realize what the process involves. People can eat pizza, kebab, sushi and spring rolls everywhere. They can choose from a range of food that comes from many different countries, as a result of food habits that have been distant and non-communicating for a long time. It is more difficult to identify the impacts caused by this “development”. To go in the street and choose from different food can be nice and quite cheap; this is not always true neither for the environment nor for who has produced that food. It is not by chance that agriculture is even more contributing to the “greenhouse effect”, known as the emission of those gases that are responsible for climate change (denounced by scientists as the biggest threat for humanity); this contribute is nowadays estimated around 17% of all the polluting emissions over the planet.

The situation is even worse for another big evolution of global food habits: the growing consumption of meat. In the second half of XX century, meat consumption has increased by 5 times, from 45 million tonnes

per year in 1950 to 233 million tonnes per year in 2000, and FAO evaluated that it will get to 465 million tonnes by 2050. Consuming animal products is growing more and more in “developing” countries, in parallel with economic growth (like in Italy and Europe): for these populations, meat is an occidental model to imitate, a status symbol that means prestige and social richness. In these areas, meat consumption redoubled from 1983, going from 14 kg of meat per capita per year to the present 30 kg. In China, the consumption of meat went from 13 kg per capita per year in 1980 to 53 kg per capita per year in 2004, with an increase by 300% in a bit more than 20 years. It has been evaluated that in 2031 the average Chinese man will be consuming the same quantity of meat as an actual North-American man, with a yearly national consumption that will reach 181 million tonnes, which correspond to 4/5 of the actual global meat production. The biggest exporter of bovine meat in the world, Brazil, has raised by 6 times the amount of its exportations from 1997 to 2008! In this way, when people eat a hamburger, which they bought anywhere at low prices, Food Sustainability makes them remember that there are other costs for the planet.

A popular study conducted by FAO in 2009 identified the livestock as a crucial aspect to be handled in order to rule and improve the impact on poverty, hunger and the environment, mostly on climate change. It states that livestock – mostly the intensive and industrial one (from which our cheap hamburger probably derives) – is an important cause for greenhouse gases emissions (which have raised by 16 times from 1900 to 2008) since it affects deforestation, the use of chemistry to produce cattle feed, fertilizers and animal medicines. The data presented by FAO during the global Conference on climate (2009) stated that, while global means of transport contribute by 13,1% to greenhouse gases, livestock alone affects by 18%: calm cows pollute more than planes! Did you expect that?

Bovine livestock is the first cause of global deforestation, particularly in Amazonia, where FAO estimated that 70% of deforested lands were turned into bovine grazing and the animal feed production fills the majority of the other 30%. 50% of grain global production and 90% of soy global production are addressed to livestock as animal feed, and this contributes in a large way to polluting lands and water, since farmers highly use chemical fertilizers, synthesis and pesticides that are useful to grow these products in the one-crops where they are generally planted. The water consumption for producing grain and forage for animals, together with the water needed for watering animals and cleaning barns, is one of the factors that consumes the global water resources the most, and has a deep impact on the planet economy of resources. According to “UNESCO-IHE Institute for Water Education”, 16 thousand litres of water are needed to produce one kg of bovine meat! Finally yet importantly, the fact that between 1980 and 2008 overweight people have redoubled shows that this impact has not improved the quality of human nutrition.

Food Sustainability & Biodiversity

Food Sustainability shows a situation where only an integrated and holistic vision can identify several links and interdependences among the different aspects of the whole image, that is to say the aspects of production and food consumption that are generally conceived as separate domains: the economic, environmental, and socio-cultural ones. For example, how much does the convergence among the present food productive system, consumes and food styles globalization and the loss of education on nutrition and sustainability influence? When people eat a sandwich, or a hamburger from a big chain of fast food, have they ever thought about biodiversity?

Nowadays, biodiversity is highly threatened by intensive agriculture and livestock, together with other non-sustainable methods of food production. A great number of plants and animals that lived in the farmers' fields for several generations has been replaced by very few modern commercial varieties, which are strictly uniform among themselves. According to FAO, 75% of farming varieties has disappeared and ¾ of global food derives from only 12 plant species and 5 animal species. In the past, for example, 7000 varieties of

apples and 2500 of pears were cultivated in USA. Nowadays, only two varieties of pears represent the 96% of the whole market. 1/3 of the native bovine, ovine and pork races has extinguished or is going to disappear. Another example involves the varieties of potatoes, estimated to be around 5000, while nowadays only four varieties are cultivated to be sold. People lost 80,6% of tomatoes varieties, 92,8% of salads, 90,8% of corn and 86% of apples.

Since it is not obvious that the consequences of this situation are considered in the right way – why are different types of pears, potatoes and sheeps so important? – it is useful to remember that biodiversity richness and variety allow the nature to survive, adapting to environmental changes, first of all the climatic ones, and to new diseases. Without diversity, living systems have a little possibility to adapt and survive. The drastic reduction of biodiversity in the food people consume involves their health, since it increases obesity (see above), allergies, lack of nutrients, cardiovascular diseases (encouraged by the use of castor products, such as flours and sugars).

Are people free to choose?

To reduce biodiversity means to reduce the number of choices. There is another hidden factor that affects this situation, and Food Sustainability helps people to identify it: are people effectively free to choose? Everything says yes: the range of food is so wide that people can choose their food from a great number of different offers. Brands, cost, quality, taste... these factors mixed, they can choose from many varieties of the same product, a tomato, a fruit, a steak, a pre-cooked dish... on the other side, they can find the same brand or type of product everywhere in the world: free as that!

What people hear from the media or read in the newspapers seems to be true: free competition is the best way to guarantee the system effectiveness and the possibility for the consumer to choose and to obtain quality products. As for the specific product, this is absolutely true... it is less true if we think of what it hides, of the route that led it here, of who gains. The reason stands in what people call “power in supply chain”: the power concentration in the supply chain that stocks markets and retailers. What does that mean? Why sustainability and nutrition are involved?

Numbers will help to understand the situation better, exploring the context of the present producing agricultural system, whose two extremes – producers/farmers on one side and consumers on the other – are characterised by a huge fragmentation. The majority of agricultural producers comprehends little farmers: it is evaluated that 404 million firms cultivate less than 2 hectares each; that half the global population lives in rural contexts, and 2, 5 billion people lives depend on agriculture; that more than 1 billion people work with agriculture (35% of global labour force); that 53% of 215 million children that work, are engaged in agriculture.

On the other side of the chain, there is the other half of 7 billion people who live in urban contexts, simply defined as “consumers”. The problem lays in the middle, where people can find economic and financial actors who – having deep roots in colonialism – were able to take advantage of globalization, openness of markets, and integrations among different steps of trade and production, being able to concentrate a great power on them. People talk about “suppliers of basic products, such as seeds and phytosanitary products”, called input suppliers; import-export companies or mediator sales assistants, called traders; organised distribution chains, called retailers/mainstream.

People think they can choose from different brands and origins, but if they investigate, they discover a shocking reality: according to a research conducted by Oxfam (the biggest NGO in the world) in 2013, the majority of the food they eat comes from ten or so companies, which are the direct or indirect owners, or control hundreds different brands and products.

Just to be concrete, it is important to tell the names: I am talking about Nestlé, Coca-Cola, Unilever, Danone, Mars, Mondelēz (ex Kraft), Associated British Foods, Kellogg's, General Mills, Pepsi&co. On a small scale, this occurs at a continental or national level: if I consider the great number of water brands that are situated in Italy or Europe corresponds to an effective concurrency among different companies, and I am wrong: it is sufficient to turn the bottle and read the label to realize it. If I think I can eat packed cold cuts always choosing from companies that are independent and in competition among themselves, I make the same mistake.

There are very big companies, which influence the market. How does it affect people sandwiches or dinners? Why is Sustainability involved? Other numbers can be useful in order to answer these questions. Firstly, I have to define an important aspect, in order to avoid standardisation: big companies have always existed and have always affected markets and politics. The present situation is unprecedented: a famous research conducted by Federal Polytechnic Institute in Zurich in 2011, stated that the number of the operative multinationals – defined on the base of international standards of OCSE – was around 43.000. Secondly, the study affirmed that the turnover of the first 1.318 multinational was the 18,7% of the total global income; that the majority of these multinationals is controlled by a group of 147 macro companies, almost banks or financial societies, whose economic value is the 40% of the global richness.

The Nestlé turnover in 2011 should be at the 69th place (105 billion \$), and there are 130 countries (Tunisia, Bulgaria, Uzbekistan...) with a lower income. Maybe this is the result of a legal entrepreneurial success, maybe companies offer many jobs, and it is not their fault if Malta has a GNP 10 times lower than Nestlé. It is important to remember that, contrary to sneakers or electronic devices producers, how and where people grow food and how it is distributed, has an impact all over the planet, and on everybody. In that way, people would consider different the fact that fewer than 500 companies control the 70% of global food choices, and that their decisions, which people believe legal, affect all the food producing and consuming system, in addition to the quality of the environment where people live and on the planet climate that one day will receive their children.

Who controls the food supply system?

In order to make the “power in supply chain” concrete, which affects both how food is produced and “implicit costs” through which what people eat reach them, other numbers are needed. It is important to understand that the real barriers that food has to overcome to reach consumers are firstly caused by this huge power concentration.

Maybe it is not clear that the first 10 big distribution chains control 15% of global food sales, and that the first 5 European chains (Tesco, Carrefour, Lidl, MetroGroup, Aldi) control 50% of the food retailers in Europe. The consequences are very simple, yet not evident, almost to new generations, born in a world where superstores are the consumption “natural” context: what reaches people's tables does not rely anymore on what food producers can offer, but on what “final buyers” – big distribution chains – decide to buy.

The majority of farmers cannot “produce and then look for a market where to sell the product”; now “big buyers” evaluate what consumers demand/appreciate the most, organising the food supply chain. This means to promote the big productions that are typical of agribusiness and big plantations, and those traders that can supply with a big quantity of products. Suppliers/producers cut prices drastically, stating that they do not do that for themselves, but for consumers. Producers' incomes tend to decrease, and small producers tend to be excluded from the market. In order to respond to that, producers invest in industrialised agriculture, increasing the vicious circle and those environmental effects I have introduced before.

The most commercialized product in the world is bananas. It is a classic example of what it is called “vertical integration”: when a company controls the different steps of the productive process, from field to distribution. In March 2014, Chiquita and Fyffes – two global bananas giants – announced their fusion and constituted a big global enterprise able to control, on its own, 14% of the global bananas market and 50% of the exportation, together with Dole and Del Monte. A research conducted some years ago had identified that: 1% of the banana final value goes to the day labourer who works in the plantation; 3% goes to the owner; 10% goes to the exporter; 15% goes to the carrier; 23% goes to different licences; 8% goes to the importer; 40% goes to the supermarket where the banana is sold!!

The cocoa situation is partly different. 90% of cocoa production, which is fundamental to produce chocolate, is realized by 5,5 million family run companies, around 2 and 5 hectare-shaped, where around 14 million farmers work. The majority of these people, who mostly live in Western Africa, live under the poverty threshold. On the other side of the productive cocoa chain, only few industrials – Archer Daniels Midlands (Usa), Cargill (Usa), Barry Callebaut (Switzerland), Nestlé (Switzerland) – see 85% of cocoa broad beans pass through their storehouses and machines, while the first 10 companies in the world share 43% of the global market. It is obvious that these big associations have a certain power in influencing the international value of cocoa and the final sale prices.

What about wheat and cereals, which are the main food of global population? Same old story: not only do the 4 main global companies – which sell cereals, Archer Daniels Midland (ADM), Bunge, Cargill and Louis Dreyfus (known as “ABCD”) – control until 90% of the cereals global commerce, but they add a significant presence in a range of basic fundamental products that are necessary to their production and commercialisation. These giants give chemical inputs and phytosanitary products, funds, silos and storehouses, and the majority of the infrastructures that are involved in the agricultural production and marketing. From a research conducted by Oxfam in 2012, we know that “*These companies go on influencing global food systems, farmers’ and consumers’ lives and consumption models*”.

People’s choices are important

In order to avoid a mental paralysis and to make mistakes when saying there is nothing to do except from eating without questioning, it is important to remember what many organisations – such as Slow Food and Fair Trade, or consumers, farmers and producers associations – are continuously supporting: consumers’ choices influence significantly agricultural and food system. Consumers have a great power: thanks to their greater awareness of their choices’ values, they can redirect the market and the production.

People’s choices are real social and political actions, since when they make a choice they go beyond a passive role, getting interested in the person who produces their food and how he/she produces it. In that way, people pass from being the “passive part” to being the “active part”, and are aware that they express their identity and values by choosing what to eat.

It is really possible not to be subjected to food: what would it be more important? Education is fundamental in order to build a better Food Sustainability, in a place where economy and production attend upon people and nature, not vice versa. Ask schools and friends to face and explore what Food Sustainability involves: people will discover that, at least in part, *they can choose*. Overall, food is the main link between the Earth and human beings, who cannot get along without it.