

International Environmental History and Law

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Within this research, environment is seen as a legal-historical problem, linked to the ecological thinking (environmentalism or ecologism) and also seen as the consequence to the main environmental disasters caused by men, including nuclear tests. It tracks the history of the international environmental law since its beginnings in the Seventies in a chronological order, with a special eye on the contemporary environmental policies in the world and specifically on European energy policy. At the end of this research, I focused the attention on some aspects and concepts that we need to know and understand to follow up and improve further coherent policies for our global community. The intent is to stimulate new researches on this discipline.

Keywords: environmental policies, history of international environmental law, environmentalism, ecologism, ecology, ecological disasters, nuclear tests

INTRODUCTION. ENVIRONMENT AS A LEGAL-HISTORICAL PROBLEM

At present, environmental issues are undoubtedly one of the most interesting and sensitive arguments from the point of view of the human link with the territory and in relation to carry out the production activities on it. Landscape is changing and it will most likely be necessary to establish new and different balances compared to those adopted previously.

Lately, great attention is paid to environmental issues by the media and institutions around the world; with increasing urgency, the problems of environmental pollution, global warming, climate and geological change, waste collection and the protection of the various wildlife and biodiversity at risk (also due to the drastic morphological change of entire areas of the planet due to fires, deforestation and other human interventions) are at the centre of the public agenda.

Among the environmental issues that afflict the planet, climate change is certainly one of the most complex to tackle and also the most recent in chronological terms. Phenomena such as the alteration of the cycles of the seasons, the limitation of water resources, the multiplication of devastating fires, often arson, the increasingly massive reduction of glaciers and the great human migrations due to wars or environmental reasons, give an idea of the urgency to articulate the related studies and policies in a *corpus* as unitary as possible and publicly available: only a well-articulated and in-depth analysis of the governmental actions taken so far by the various countries (above all in the light of the major environmental disasters happened in the past, which led to the adoption of protocols guaranteeing global public health) can provide a general indication on how to build a broad and long-term political basis.

Even observing very different environmental governmental actions, common techniques could emerge for the improvement of the quality of life of human beings on their territory and for the protection of Nature itself.

Despite the flourishing of informal local and sectorial initiatives, civil society is struggling to give meaning, organicity and legal basis to the necessary transformations of lifestyles in order to achieve a better balance on the Planet; industries are struggling to accept more correct paradigms to reduce consumption, rationalize the raw materials, trying to quickly moving towards models of real circular economy within a truly sustainable development.

The environmental law within our societies acts as a focal point for the implementation of new industrial assets and cultural policies for an urgent economic development that is increasingly sustainable, protecting human health and the cultural, historical and natural landscape. In this sense, the legislative traces of the recent past allow a rather precise historical-political reconstruction of the background of ecological ethics adopted so far. In this context, environmental law and other new scientific disciplines, such as *landscape ecology*, will be helpful for a circular economic recovery hopefully respectful of all instances.

A brief *excursus* on the history of ecological ethics is required in order to reconceptualize, in terms of opportunities for development and change, an appropriate cultural perspective for redrawing the relationship between the settlement system and natural space.

It is in fact in the purely ecological field that there is a continuous need to redefine the territory with truly sustainable development paths, like naturalistic, botanical and faunal recovery; the creation of ecological networks and parks, conservation, reclamation and/or reconstruction of the territory and degraded areas are needed in order to prevent the abandonment of sensitive areas and also enhancing the tourist offer; the construction of eco-museum networks and other eco-compatible infrastructures will be fundamental in a perspective of modernisation that aims at improving collective well-being (also in terms of social equity) in an environment able to maintain the present biodiversity as much as possible.

On the other hand, there is a need to regenerate certain traditional sectors (first and foremost agriculture and industry), which have transformed the European landscape due to the reduction in woodland without taking account of eco-compatibility aspects, such as the essential role of proper waste disposal, area that presents the problem of illegal waste trafficking to date.

In the recent past, we have witnessed an ever-increasing growth of local spontaneous movements in support of environmental protection (which, thanks to the spread of new technologies and *social networks*, has coined new concepts such as *res telematics*, *net-activism* and *IoT-Internet of Things*) that have arisen especially as a result of the damage caused by the major disasters that we have witnessed, with devastating and lasting impact over time, both on the territory and on the humanity itself. Among these, we remember the recent arson fires that have involved entire regions of Siberia, Africa and the Amazon forest. These very serious episodes are now considered real crimes against humanity; moreover, the memory of some culpable industrial disasters must be preserved, such as the Chernobyl power plant explosion, in Bhopal, Fukushima, Seveso and in other countries. Two striking examples of the environmental problem linked to unhealthy industrial activities are the industrial pole of Marghera and the Ilva of Taranto.

In conjunction with the negative impact on the collective imagination following the environmental disasters just mentioned, the concept of the **right to a healthy environment** was born, now finally included among the fundamental human rights.

Contemporary environmental problems are increasingly considered to be of global interest, as the negative consequences often not only affect the surrounding areas, but also have an impact even thousands of kilometres away and can last for long periods of time, irreversibly affecting the earth's natural balance.

The concept of *environment* tends, according to the perspectives and the historical-political paths of each nation, to decline with different nuances.

The term *environment* can be understood not only as a physical place, but also as a mental scenario, an ideal, imaginary and virtual landscape, or an area with changing boundaries: an environment can be divided into geographical macro-areas, even if they are distant from each other, which, however, in terms of biodiversity have common characteristics (such as the Mediterranean basin, large islands, river deltas), which do not have well defined physical boundaries, but that can be evaluated and interpreted according to the reference context; moreover, the concept of *legally protected landscape from risks* (caused mainly by activities) can take on peculiar characteristics depending on the time frame considered, the scope of application of the rules and the results to be achieved.

The definition of the **right to the environment** given in the 2001 in the Green Paper and Agenda 30 by the European Union should be modulated according to the various European national legislations which, in addition to having extremely different views, are obliged to deal with equally heterogeneous problems.

A very interesting relatively recently phenomenon is increasingly becoming part of the mindset of public and private actors: *Corporate Social Responsibility* (or CSR). By now, it is only a voluntary practice, a sort of self-limitation and self-responsibility of production companies: CSR was born on the basis of in-depth analysis of routine corporate *governance* practices, *risk assessment* and *risk management* calculations. The study of this problem may also suggest the adoption of increasingly precise and functional policies within the various production realities.

Social Contract Responsibility (or CSR) is a form of self-regulation born around 1950 in the private/corporate sphere and whose practices, at present, are not imposed by laws specifically promulgated: these procedures adopted by some companies deal mainly with the regulation of the conditions of the worker within the company and the company's relationship with third parties (for example, in the relationship between the injured party and the damaged party in the event of environmental damage, where there is no mandatory relationship, but not even extraneousness).

As we have seen, alongside the legal protection of the healthiness of the environment, the motives for the protection of property may well contribute: the jurisdiction prepares legal actions aimed at obtaining both the cessation of the anti-legal behaviour and compensation for the damages suffered and even the adoption of precautions to prevent the repetition of the damage. Consequently, the environmental ethics of companies must also be measured with these legal arguments, while maintaining high economic efficiency. One of the tasks of CSR is, for example, to identify ways of "*communicating sustainability*" to the other stakeholders involved in a dynamic, non-static way, which is also useful for prevention and the exchange of information. Other goals of CSR are to create partnerships in an interactive way, to improve the quality of the working environment for employees while respecting fundamental human rights, also through collaboration and partnership. In addition, the CSR study contributes to the evaluation of insurance and other appropriate financial coverages in case of environmental damage. The rate of *ethical sensitivity* that production companies show in the concrete implementation of CSR practices now becomes central.

On a broader scale, CSR practices could also be applied beneficially to other areas of social life.

By analysing such sources (normative and historical, including governance policies), one can catch an ideal panorama that may be binding economic ethics (as asked from many parties) beyond the borders.

It must be said that the various world poles of legislative production (in particular North and South American, European and Asian poles) look at each other with great interest, exchanging ideas and procedures that tend to have an ever better relationship between economic development and environmental protection. In this context, the guidelines of the European Union and the Italian legal doctrine are often a source of regulatory inspiration in environmental matters also for non-European countries.

Another important reference is UNESCO, which, despite not having a punitive system against environmental crimes, has a decisive power in the exercise of attributing the status of *World Heritage* to different geographical places: these areas are selected on the basis of their undoubted and irreplaceable naturalistic, landscape and historical interest. Some of these are also home to strong economic interests due to the presence of vast areas of fishing, breeding, cultivation, energy production and, of course, of tourist interest.

Besides, the principle of sustainable development clashes with other fundamental principles, such as the right to work and the right to profit.

Since ecological demands are so important, we must not underestimate the exponential development of current technological and information technology knowledge, which could well contribute to a positive metamorphosis of environmental policies: for example, in the near future, *blockchain* technology could also be used in this sector, especially to combat the criminal acts perpetrated by large industrial companies or the mafias in the sector. Since May 2019, EU policy has been oriented towards a virtual platform (EIONet) where all voluntary declarations by large European companies which decide to adopt CSR policies can be channelled. This embryonic self-declaration structure could prove to be very important in terms of information exchange and validation among the various stakeholders (consumers, shareholders, public

bodies, companies, employees and clerks, NGOs, academies and universities, research centres, environmental committees, consumer associations and private citizens).

One of the main problems and obstacles to the implementation of environmental policies is and remains in every corner of the globe corruption and mafia-style association, which now affects all social and professional levels, public and private: there are in fact criminal realities that are extremely difficult to combat with the current instruments. The self-reporting register created by the EU (in the future maybe made compulsory and drawn up on a *blockchain-type* incorruptible register) with its policy of transparency of pro-environment operations could become a model to combat more effectively the phenomenon of the increasingly widespread environmental crimes that are perpetrated abundantly every day throughout the world.

To sum up, it will be necessary to carry out an analysis aimed at:

- 1 briefly reconstructing a history of ecological ethics and international environmental law, as well as the most important environmental disasters;
- 2 deepening the legal sources where the concepts related to the environment are normatively consolidated, taking into account the context and the specific characteristics of the material and cultural, biological, anthropological and economic heritage of the various macro-areas;
- 3 outlining the guidelines that have contributed to the formation of the fundamental concepts of the international environmental sector, analyzing the legal-historical sources, also on different legislative levels;
- 4 respecting the historical and socio-cultural characteristics of the diverse macro-areas, verifying how a pollination favourable to the best organic development of international legal matters can take place;
- 5 collecting and analyzing the most common CSR practices (*governance, risk assessment and risk management*) in order to assimilate their concepts and find the tools to make these procedures widely accepted and binding;
- 6 through the critical analysis of the collation of sources, we will tend to deepen the concept of “*ecological productive ethics*” and maximize it;
- 7 studying the practices of monitoring and promoting the interlocutory action of companies with the various *stakeholders*;
- 8 identifying international lines of action on sustainable development to protect the various areas at risk, landscapes and cultural heritage, also taking into account UNESCO indications;
- 9 identifying issues related to the possible non-application of sanctions for environmental violations and evaluate some possible remedies;
- 10 preserving a memory of the fundamental steps of legal theory and to photograph the current state of the art.

The aim is to stimulate research, particularly:

- 1 to foster multidisciplinary among the sciences involved and to develop research projects in the various macro-areas of interest, as suggested by the 1972 Stockholm Conference;
- 2 to evaluate the possible role of the media in the development of a global ecological social thinking and in the production of appropriate ethics;
- 3 to assess the possible application of new technologies to improve the tasks that the actors involved aim to achieve;
- 4 to encourage the creation of *ad hoc* platforms and libraries containing legal and historical documents relating to the environment (possibly divided by areas of interest);
- 5 to contribute to the academical study of the various concepts relating to environmental protection from a variety of scientific perspectives;
- 6 to formulate standardized research methodologies in a holistic view of the subject that can be applied in different macro and micro fields.

MAN AND ENVIRONMENT: A FOCUS ON THE DISCOVERY OF ECOLOGY ECOLOGICAL THINKING

Modern Ecology and Environmentalism; The New Environmental Sciences; The Birth of Ecological Protest - The Environmental Movement

At present, environmental issues are undoubtedly one of the most interesting and sensitive arguments from the point of view of the human link with the territory and in relation to the carrying out of production activities on it. Landscape is changing and it will most likely be necessary to establish new and different balances compared to those adopted previously.

The role that environmental law plays within our societies is to act as a focal point for the implementation of new industrial assets and cultural policies for an urgent economic development that is increasingly sustainable, protecting human health and the cultural, historical and natural landscape.

We need to understand some basic concepts in order to understand the history of environmentalism to get the meaning of political choices made in this scientific area. Those choices are based on several disciplines, including non-legal ones, that contribute to the birth formation of environmental legislation, since this field has a recent birth.

First of all, the contemporary legislator's attention to the environment stems from the development of ecology and ecological thinking.

The proper object of ecology is the relationship between man, animals and plants, i.e. the ecosystem, defined as "a complete structure of living beings in relation to each other and their inorganic environment, which is completely open, but capable to a certain degree of self-regulating"; it studies the environmental damage that can be caused by human factors, such as the removal of animal resources, (e.g. the introduction into the environment of organic or inorganic residues from consumption and production activities, the modification of the characteristics of natural species or environment for the benefit of man), with the consequent loss of existing biodiversity.

It is a scientific discipline that has often pushed and collected the popular voices, informally denouncing many of the violations carried out by large multinationals in the name of progress, but at the expense of the healthiness of the environment.

The Ancients were not very concerned about possible environmental damage, as there were no rapid changes in the landscape and climate. At that time, the only form of environmental protection could concern sites with religious restrictions: human intervention that would provoke a divine reaction human was not allowed in sacred places, as several myths attest.

The Neolithic introduced the deforestation of large areas for agriculture and livestock grazing, the need for fuel supply (wood or charcoal) and raw materials for building and manufacturing activities. Previous cultures were mainly devoted to harvesting and predation activities such as hunting and fishing, so there was no problem for the environment in terms of resource extraction.

In ancient culture, Theophrastus was the only one to manifest a certain ecological sensitivity: natural things exist not in view of something or in the impulse towards good, but rather in their intrinsic reality and in their mutual relations with completely autonomous aims. His studies dealt with the relationships of plants in their *habitat* according to the factors of light, exposure, water, soil nature, climate, or the analysis of climate change related to deforestation, land reclamation and river diversions.

Deforestation was an activity of maximum environmental impact in Greece and Rome, causing serious hydrogeological instability, but the Ancients thought that such catastrophes were unrelated to human action: natural regeneration and systematic replanting were not foreseen, and erosion caused by water and wind finally provided the real desertification of vast areas once covered by forests.

Large classical cities were also plagued by problems related to urbanization: crowding, traffic, noise, water and air pollution, sewerage system limitations, difficult waste disposal, danger of collapse and fire, sewerage system deficiencies due to the use of lead piping for drinking water.

Little is known about the historical approach and the urban hygiene policy practiced in Eastern and Middle Eastern and societies.

Modern Ecology and Environmentalism

The first pages of the history of ecological debate were written by 19th Century economics scholars, whose ancestors were Thomas Malthus (1766-1834), John Stuart Mill (1806-1873) and later William Stanley Jevons (1835-1882). This heated discussion mainly concerned the concept of the *limit of the Earth and its resources*. Malthus suggested to decrease births among the less well-off classes by reducing welfare, since in the future, the increase of the world population would determine an insufficient availability of food. Vitruvius in *VIII, 6, 10-11*, proposed to replace the lead pipes with terracotta ones.

In 1864, from the geographical observations of G.P. Marsh, one of the very first studies on human action was able to predict remarkable alterations on the environment (Marsh G. P., (1801-1882) *Man and nature*, 1864).

But ecology in its current meaning, is a scientific discipline of naturalistic kind, born in the second half of the last century (the invention of the name is attributed to the German biologist Ernst Haeckel who would have used it in one of his books in 1866 for the first time (Ernst Haeckel (1834-1919), German Darwinian biologist and philosopher, used the term in his most ambitious work, *Generelle Morphologie der Organismen* in 1866) that investigates about the relationships between living beings and the surrounding physical environment, which involves the analysis of the natural cycles of food chains (producers-consumers-decomposers) and the dynamics between plant and animal populations in relation to environmental changes.

The ecological challenge, also called *environmentalism* or *ecologism*, is instead a theory, a current of thought, and therefore gives birth to a humanistic and social discipline, whose object is the same as ecology (how human activity conditions interfere with the environment), but essentially in a political sense and born after the observation of environmental damage and exploitation of nature resulting from purely capitalistic speculation.

Those years were characterized by an important world economic development, which stopped, however, with the Great Depression of the Thirties rised in the United States, but which had immediate repercussions on European countries.

Beyond the hegemonic and ideological causes that saw Hitler as the main protagonist, the issues that led to the world conflict essentially concerned the economic structures relating to the supply of raw materials (energy, coal, steel, oil), the traffic of goods, the domination of markets, the exploitation of resources, the exclusivity of commercial distribution channels and the control of high finance in the absence of a world market with free competition.

In Europe, the biggest outbreak developed between France and Germany due to the dominance of heavy industry, particularly coal and steel production. This is the *humus* of national-socialist theories, which, combined with German expansionistic politics, led to the Second World War with the consequences we know well and which saw France, England and the United States as winners.

At the end of the Second Conflict, it was therefore decided to resume the process of integration that previously begun with the Paris Conference in 1919 by the winning countries, in order to proceed collectively to stem and manage the sectors at the origin of the outbreaks.

As we shall see, the autarkic practices of those times were later widely re-evaluated, as they led to the development of intermediate recovery techniques that are still useful today, especially in developing and poor countries.

For example, during the first oil crisis of 1974-1984, the United States government prompted some of its scholars to review the archives taken in Nazi Germany to find information on the production of synthetic gasoline from coal; the production of scrap iron led to the creation of processes to produce steel from scrap; in the steel industry ingenious processes (the Cowper towers) were invented to recover heat from fumes, i.e. for today's energy savings; the production of paper from old fabrics is another method borrowed from the past.

After the First Great War, some multilateral environmental agreements were stipulated, along the lines of the London Convention of November 1933 for the protection of fauna and flora considered at risk in some parts of the world (especially in Africa) or that of Washington dated October 1940 on the preservation of the panoramic beauty of American countries.

In the Mid-Sixties, the history of nature conservation was animated by experts in ecology, who were the real promoters of laws to protect nature, for the institution of the conservation of parks and their various ecosystems, particularly rare and valuable, for the protection of endangered animals and wetlands.

The movements for the conservation of nature, cultural heritage and the fight against pollution were born in an essentially bourgeois environment. The first nature conservation associations (WWF, Club di Roma, then Greenpeace and others) mobilized for the recognition of new rights, such as the right to clean air. But these initiatives immediately clashed with the economic interests of tourism, oil, mining and timber cutting companies.

Investigating the history of these associations is not easy, because there is a shortage of documents and archives. Unfortunately, there is no systematic history of the Commission for the Conservation of Nature and its Resources of the CNR, which was an important focus of ecological protests in the 1970s. There is also a lack of the Italian industrial history at universities. On the contrary, the main foreign associations (in the United States the Sierra Club, the Audubon Society and Greenpeace) have taken care to reconstruct their own histories.

The New Environmental Sciences

Ecology is a scientific discipline whose object is the ecosystem, and includes studies on biology and earth sciences; on the other side, environmentalism is a political protest movement against unsustainable capitalism.

Because of their contents, these disciplines together gave rise to a number of other relatively new areas of study in the 20th century, such as landscape ecology, history of conservation of historical and cultural heritage, ecological economics, environmental history (a kind of history of geography and landscape intertwined with the history of agriculture, forestry and land use) and many other lesser-known disciplines, such as history of urban ecosystem analysis or bioeconomy: Nicholas Georgescu-Roegen (1906-1994) integrated neoclassical economic theory and mechanistic vision with the life sciences, thus founding the bioeconomy. His thought pointed out that, since the economic system is based on the physical-natural system, it is necessary to take into account its physical laws in order to fully understand economic processes. Consequently, he studied the principles of thermodynamics in order to put them into the economic framework. See his book *Economic Analysis and Economic Process*, 1978.

All these areas of study concerning nature are part of the **Environmental Sciences**, a large academic field recently created, whose main characteristic is **interdisciplinarity**: including physical and social sciences, it provides solutions to environmental problems with an **integrated approach**.

The Birth of Ecological Protest – The Environmental Movement

Genuine ecological thinking was born in the 1960s, because the problem was much more evident than in the past.

In 1962 the American biologist Rachel Carson (1907-1964), starting from her biological and naturalistic observations, promoted the protest movement against the use of persistent chlorinated pesticides and opened the way to ecological protest in the modern sense in her book *Silent spring*.

Kenneth Boulding (1920-1993) was the first ecological economist who, in his article *The Economics of the Coming Spaceship Earth* (1966), introduced the idea of the Earth as a closed system. Boulding considered the paradigm of GDP to be wrong, because in its calculation, activities not associated with well-being (such as the war sector) are taken into account, while damage from environmental degradation, pollution and limited natural resources are not considered.

Those years were mainly characterised by a series of ecological disasters, such as the loss of the Santa Barbara oil well in the sea in California or the devastating effects of herbicides in Vietnam.

Between the end of the 1960s and the early 1970s, public and media were interested in pollution, war, urban congestion, expansion of consumption and building speculation, proposing an alternative environmental model more on a human scale that would allow living conditions in harmony with the surrounding nature. In the same period, the chairs of ecology and associations aimed at conducting many ecological battles; new concepts such as *sustainable development and ecosystem* were born, new

consumption paradigms were proposed and the potential of recycling and the ethical dimension of those themes were highlighted. Citing some events in the long history of ecological struggles, we can remember the struggles against incinerators and landfills; the struggles against the use of pesticides; the struggles against hunting.

In Italy after the Second World War, an increasing attention towards ecology led to the ecologist movement (on the wave of the American environmental movement) characterized by various popular movements against atomic weapons, nuclear experiments in the atmosphere and their radioactive fallout on human health and other environmentalist and pacifist battles.

The protests, especially active in the years 1970-1985, involved millions of people from all the industrialized countries most exposed to pollution. McKean M., in his *Environmental protest and citizen participation in Japan* published in 1981 exposed the situation in Japan, affected by the radioactive contamination of the first atomic bombs and then by numerous dramatic industrial pollution.

Ecological protest contents had soon links with pacifist, anti-militarist and non-violent movements. The challenge concerned criticism of the capitalistic model as a whole, whose only law was and is to consume huge amounts of resources in order to create increasing amounts of revenues. This model consists mainly in the imperialist subjugation of peoples and their territories (through wars or by creating induced needs) and then robbing their natural resources, also exploiting local labour at derisory costs.

This protest branched out into various movements (cultural, political, social and even environmental). Another important point raised by the protest concerned the need to contain the rapid increase in the world population compared to the availability of raw materials, according to the purely ecological principle already indicated by Malthus, the *carrying capacity* of each ecosystem. Since 1945, the magazine *Bulletin of the Atomic Scientists* has been denouncing the dangers of nuclear weapons and dedicated a wide space to environmental problems.

The lively protest led to the birth of spontaneous movements and generated a widespread desire for scientific knowledge and culture: many scholars and specialists engaged in scientific literacy on the dangers associated with industrial pollution, radioactivity, dioxins, climate change, and studied the relationship between the environment and the production/consumption of goods. The history of environmental associations and green parties has progressive left-wing motives and remains a topic of great interest for its political and sociological aspects. Green movements and parties have been intertwined with traditional political parties, such as the Radical Party, the Proletarian Democracy, the Pdup, partly the PCI with its Youth Federation Fgci (in Italy). Their existence can be reconstructed from short passages in the newspapers of the respective parties. Some unsystematic relations rised between the environmentalist associations and the Italian consumer defence movements.

For many years the movement of the universities has had great importance: people of great competence organized cycles of lessons with their own handouts. Even the history of ecological dispute does not have a unified historiographical complex or dedicated historical archives. Valerio Giacomini, Giulio Maccacaro, Giuseppe Montalenti, Raffaello Misiti, Laura Conti, Antonio Cederna (to name but a few) had interesting libraries dedicated to the theme, but these have been lost or are now difficult to access.

The years from 1974 to 1980 were marked by oil crises, which contributed (together with major ecological catastrophes such as Seveso, Three Mile Island and the damages caused by atomic experimentation) to revitalize and increase the contents of the various ecological movements.

In the factories there were increasing demands for a workers' culture in need of improved conditions for workers, safety in the working environment and protection against harm inside and outside the factory.

Many people recognised the source of environmental failures in productive economic activities and in the rules of the capitalist economy and, during the 1960s, ironized about the value of GDP as an indicator of waste production and pollution. Ecology scholars largely confirmed this connection.

The 1980s saw the entry of a new economic *boom*, which tickled the throats of both developed and developing countries, and ecological demands automatically took second place.

But as the economic growth increased worldwide, so did the international guidelines to stem the effects of capitalism that had become unsustainable.

1986 saw an exponential increase in national and international environmental legislation. Thus international environmental law was born.

MAIN ECOLOGICAL DISASTERS

The Minamata Disease (1950); The Great Fog of London (1952); Seveso (1976); Bhopal (1984); Chernobyl (1986); Ilva of Taranto (2012); The Port of Marghera (1994); Nuclear Tests and the Case of North Korea

Ecological or environmentalist thinking has developed in recent decades mainly as a result of certain environmental disasters that have occurred for human cause.

In the following paragraphs we will present those that most of all have contributed to the consolidation of that certain contemporary ecological current that has allowed the development of an increasingly consistent and meaningful legislation at an international level. These environmental disasters have been followed by a number of judgments that have inexorably marked the history of environmental law in the world and remain as a milestone in order to avoid similar events of such widespread echo and propagation in space and time in the future.

The Minamata Disease (1950)

Minamata is a Japanese town located on the island of Kyushu, and its bay is known for the disease that hit its inhabitants in the 1950s.

The chemical industry Chisso Corporation, founded in 1908, was a producer of acetaldehyde (a chemical substance used to produce plastics, as its use increased exponentially after the Second World War) and soon became an integral part of the local economy. The synthesis of acetaldehyde required mercury sulphate as a catalyst; from this process, a secondary product, methylmercury, was also obtained.

In 1932, the Chisso Corporation began to discharge methylmercury-contaminated wastewater into the Shiranui Sea Bay. The fish began to float and the cats in the area showed an abnormal behaviour (they seemed to go crazy, threw themselves in the water and drowned). This was soon called *cat dancing disease* or *cat suicide* by the inhabitants of Minamata.

After about twenty years, in the early Fifties, similar manifestations were also found in human beings, who complained of numbness in their limbs and were no longer able to grasp small objects or fasten a button; many of them had difficulty in seeing, hearing and swallowing, as well as the inability to maintain balance, coordinate their movements and articulate their words. These symptoms could worsen to convulsion, coma and death.

In May 1956, Dr. Hajime Hosokawa from Chisso Corporation Hospital reported to the Office of Public Health the discovery of an epidemic of an unknown disease affecting the central nervous system. Initially, he thought it was a contagious disease and, as a preventive measure, the affected persons were isolated and their homes disinfected.

The wastewater from the Chisso Corporation plant was recognized responsible for the syndrome which was due to contamination with heavy metals that led to mercury poisoning by ingestion of large quantities of molluscs and crustaceans living in the bay.

Chisso was required to install a purifier by the Minister of International Trade and Industry, but this solution was not sufficient to remove the mercury found in the organisms and the cases of that disease became increasingly frequent.

In 1961, there was an increase in the frequency of cerebral palsy and other alterations in children in the Minamata area and, although mothers showed no symptoms, doctors soon agreed to recognize the disease as congenital, because methylmercury was able to exceed the placental threshold during pregnancy.

Only in 1968 the Minamata disease was recognized as a disease caused by environmental pollution. In the same year, the Chisso plants stopped discharging mercury (from 1932 to 1968 it had spilled about 25/30 tons of methylmercury deposited in the sludge where all the microorganisms and animals of the seabed feed, thus entering the food chain), but by then the damage was irreparable: Minamata disease had already

affected many people who had fed daily on the fish of the bay. Consequently, the poison continued to be part of the diet of the local community and the syndrome did not stop affecting the population.

In the early 2000s, about 30,000 persons applied for free health care offered by the State, but the Government recognized only 2,000, most of them now deceased. The applicants included people from all over Japan, born to parents living along the shores of the Shiranui Sea. The extent of the poisoning was much greater than the Government wanted to recognize.

Minamata Disease is still an important issue in today's Japanese society: in 2010, the court cases against Chisso and the Government reached an agreement: the sick people were entitled to receive a per capita amount of 2.1 million yen and medical assistance every month.

These sick people are still isolated due to fear of contagion and, although today methylmercury is no longer discharged into Minamata waters, this problem is still far from being solved, as tons of methylmercury still lie on the seabed and continue to spread into the ocean (contaminated fish have been caught up to 600 km away). Methylmercury pollution is no longer a solely matter for Japan, but now affects most of the oceans.

The Great Fog of London (1952)

A blanket of smog, a dense and smelly fog, enveloped London from December 5th to 9th, 1952. About 12,000 deaths were estimated, adding 150,000 people with serious breathing problems. The animals were never counted, although many were the victims.

The Great Smog is known to be the worst air pollution event in environmental history, although throughout the 19th and early 20th centuries London was already known for the dense fog that often descended on the city. These were the effect of a mixture of atmospheric agents and pollution resulting from extensive and very dense urbanisation depending on factory emissions mixed with the smoke from half a million domestic fires. But, in December 1952, temperatures dropped sharply and the inhabitants were forced to increase the power of their heating systems (at that time almost all of them coal-fired), generating a sort of *pea soup*, a very thick yellowish fog containing soot particles and the very poisonous sulphur dioxide.

To deal with the situation, on July 5th, 1956 Queen Elizabeth II passed the *Clean Air Act*, a law proposed by the Parliament that provided for various measures to reduce polluting emissions from heating and electricity production plants.

Even today, the introduction of this measure is considered one of the fundamental moments in the history of the ecological movement of the Twentieth Century, being one of the first legislative acts to recognize the importance of the problem of air pollution.

Subsequently, a law was enacted to reduce emissions, as the product of fine dust could not be burned; this law also introduced the obligation to raise chimneys and to build new factories outside urban centres.

Smog is largely made up of sulphate, but what happened in 1952, causing the transformation of sulphur dioxide into sulphuric acid? The answer came 62 years later, when the same problem (without victims, however) also occurred in China. After decades of research, an international team of scientists managed to discover a specific chemical reaction, the result of which was recently published in the journal *Proceedings of the National Academy of Sciences*: according to the Chinese scientist Renyi Zhang, the cause was nitrogen dioxide, another co-product of coal oxidation present in London in 1952. This component is not present in modern China, but the enormous amount of fertilizers used, combined with road traffic, significantly raise the level of ammonia in the air which, in fact, neutralizes nitrogen dioxide. Consequently, the air in Beijing and Shanghai, although very polluted, is not acidic but neutral.

Seveso (1976)

In 1945, ICMESA (Industrie Chimiche Meridionali S.A.) with offices and management in Milan) built a production plant on its own land in the Municipality of Meda, Italy.

The origins of this company date back to 1924, when the company Industrie Chimiche K. Bengher e C.S.A. changed its name to ICMESA; its headquarters and factory were in Naples and its activity concerned

the production of organic dyes, synthetic flavourings and intermediate products for the pharmaceutical and chemical industry.

In the Fifties and Sixties, the size of the factory grew steadily, causing the first problems due to the smelly gases exhaled from the nearby Certesa torrent. Givaudan & C. of Vernier-Geneva always remained the main shareholder of the company. In 1963 the multinational Hoffman-La Roche, based in Basel, acquired L. Givaudan & C. and consequently (first through Givaudan and then among the shareholders) became the owner of ICMESA.

In 1953, the Veterinary Office of the Municipality of Seveso ascertained an intoxication among the sheep that drank at the Certesa, immediately attributed to the ICMESA discharges which, on that occasion, was called an *unhealthy industry*.

ICMESA disagreed with the health officer's assertion, rejected the responsibility for the death of the 13 sheep and did not accept the classification as an unhealthy industry, pointing out that the waters upstream of the plant also emitted disturbing fumes. However, ICMESA undertook to improve the problems related to discharges.

A few years later, in May 1962, the mayor of Meda was forced to re-appoint the ICMESA, as waste fires were developing in the north of the plant, causing unbreathable smoke clouds that were harmful to public health. ICMESA rejected again these accusations, pointing out that there was only one fire that had developed for unknown reasons and was promptly extinguished after three quarters of an hour. However, the company took the utmost precautions to avoid similar incidents.

After almost a year, there was another fire of waste and slag from abandoned tillage material on the company's unfenced land. This caused panic among the population and a serious danger to the railway and the road network.

ICMESA was called upon to take action to prevent further incidents of this kind (by law, the slag and waste had to be destroyed in such a way as to safeguard public or private safety, and not abandoned on the ground).

The ICMESA still discharged the responsibility on some shepherds who had stopped near the plant and who, after lighting a fire, had escaped, but it assured that it would cover the slag more often with some earth to avoid the repetition of the inconvenience and also committed itself to fence the slag deposit.

In 1965, the waters of Certesa were highly polluted, both from a chemical and biological point of view. It was therefore necessary to improve the ICMESA purification plant. But in the following year, an inspection found that, despite the modifications made to the plant, this did not give the expected results.

In 1969, the health officer stated that ICMESA was a major source of both liquid and gaseous pollution and that this malefic action was not limited to the surrounding area, but (through the aquifer, the atmosphere and the stream) extended to *other* areas, even far from the source of pollution.

At the end of 1974, ICMESA's Technical Director Herwig Von Zwehl was reported to the Court for "having - with several actions in connection with the same corrupted and adulterated criminal design to feed groundwater before it was drawn - made it dangerous to public health by discharging sludge into a leaky puddle". But Von Zwehl was then acquitted for lack of evidence.

On Sunday, July 12th, 1976, the mayor of Seveso Francesco Rocca, received a visit from two ICMESA technicians who reported an accident that had occurred the previous day inside the company: a reactor producing trichlorophenol had exploded, assuming the possibility that tetrachlorodibenzo-para-dioxin (commonly called dioxin) had been produced (Tcf is a commonly available basic chemical intermediate that is also used for herbicides).

The scientific certainty of the proposed hypothesis was acquired by the ICMESA staff the following July 14th, but the Italian authorities were not informed.

ICMESA and Givaudan decided to admit the seriousness of the situation only 5 days later, officially declaring the release of about 400 kg of reaction products and reagents, including TCDD.

The toxic cloud was carried by the wind in a South-South East direction. The mayor of Meda ordered the closure of the factory as a precautionary measure, the reclamation of the area and the temporary evacuation of houses, factories and camps, limited to the period necessary for the reclamation of the limited area, called "Zone A".

But, in the following days, the evacuation extended, with a first and then a second extension of Zone A, which resulted in a further evacuation. The first dead animal count was about 3,000: they were either slowly dying and losing their strength, or they seemed to go mad. Cats meowed all the time, dogs became aggressive, nervous, unapproachable.

On October 7th, 1976 the official mapping of the area took on its definitive shape, with the indication of a zone with a lower rate of pollution (Zone B) which also affected the municipalities of Cesano Maderno and Desio with a perimeter development of 16.5 kilometres and a third zone (Zone R or “di Rispetto”) with a perimeter development of 26 kilometres.

On October 11th, 1976, a group of displaced people from Zone A peacefully re-occupied part of the polluted area and temporarily blocked the Milan-Meda highway, asking the authorities to immediately clean up the area and reopen the connection with the centre of Seveso.

Another reason for grievance was the decision to favour, among other things, the construction of an incinerator to eliminate dioxin. The City Coordination Committee, on the other hand, had suggested a controlled discharge method, i.e. to solve the problem by placing the polluted material in reinforced concrete caissons, ponds, anti-seismic and totally or partially embedded in the ground, covered with earth and greenery.

In early 1977, the authorities had to deal with the problem of the illegal return of displaced persons to the areas at risk and the Army returned to Seveso and Meda to guard the polluted area. This episode contributed to increase the tension due to the stalemate of the clean-up operations and the growing cases of chloracne found in children, as well as the persistent presence of dioxin in schools.

The Special Office for Seveso was born, which would take care of the reclamation costs and the construction of new houses: their costs (which the Region calculated to be over 121 billion old Italian Lire) were to be entirely attributed to Roche-Givaudan.

In June 1977, the Parliament set up a Parliamentary Commission of Inquiry with the task of ascertaining the activities of the Meda factory, the administrative responsibilities and the consequences of the accident on the health of citizens, environment, territory and economy of the area.

On March 25th, 1980, the Undersecretary of the Interior and the President of the Regional Council announced that they had reached an agreement with Givaudan, which assumed the burden of paying the sum of ITL 103.634 million for the disaster. The transaction provided for ITL 7.5 billion for the Italian State and ITL 40.5 billion for the Region for the clean-up costs previously incurred. A further ITL 47 billion was earmarked for the new reclamation programmes and ITL 23 billion for experimentation.

In addition, a Foundation for Ecological Research was set up, to which Givaudan contributed with the payment of the sum of half a billion ITL and with the contribution of the properties purchased within Zone A. The transaction excluded the unforeseeable damage that would later emerge and the damage suffered by private individuals, which the Swiss multinational continued to liquidate through its Milan office.

The settlement of course ended the legal proceedings initiated by the Monza Public Prosecutor’s Office in the aftermath of the disaster.

In 1977, the Regional Council of Lombardy approved the 5 intervention programmes to reclaim the polluted territory. The realization was entrusted to the Special Office for Seveso. Having abandoned the idea of building an incinerator oven to eliminate the polluted material, two waterproofed tanks were built between 1981 and 1984 where the contaminated material was deposited: the capacity of the Seveso tank is 200,000 m³, while the capacity of the Meda tank is 80,000 m³.

In 1983, a park was designed for Zone A, the future Oak Forest. At the end of 1986, the care of the park was entrusted to the Azienda Regionale delle Foreste (ARF), which planted 5,000 trees and 6,000 shrubs.

Thanks to further interventions by the ARF, at the end of 1998 the park included 21,753 trees and 23,898 shrubs, which is four times more than the initial planting inherited from the Special Office for Seveso.

The decision to build a forest after the removal of the land is mainly due to the popular movements that arose in Seveso after the accident and that strongly opposed the initial decision of the Lombardy Region to build an incinerator oven to burn all the polluted material.

Bhopal (1984)

Union Carbide India Limited (UCIL), a manufacturer of plant protection products, was founded in 1934 by Union Carbide Corporation USA (UCC), an American investment company. In 1959, UCIL was a subsidiary of UCC USA which, at the time of the accident, held most of the shares of UC India.

In 1969, the Bhopal plant was built on an area rented by the Indian Government. In 1980, the production of methyl isocyanate (MIC) went into operation. MIC was an intermediate product in the production of the insecticide Carbaryl (trade name Sevin) and Bhopal was the only plant producing it outside the United States. But the crisis of 1982 led to the dismissal of 40% of the specialized personnel.

In the summer of 1983, Union Carbide, close to closure, suspended the production and transferred it abroad. However, 63 tons of MIC remained in the three underground tanks. In 1983, the safety systems (including tank refrigeration) were shut down and routine maintenance was stopped. The pilot flame of the combustion tower (the last safety system to stop any leakage of contaminating gas) was extinguished. Then the factory closed definitively on October 26th, 1984.

The Bhopal disaster occurred on December 3rd, 1984 due to the spill of 40 tonnes of methyl isocyanate. During a check-up due to some malfunctions, some water ended up in the tank: this event caused the reaction of the methyl isocyanate and increased the pressure inside the tanks. The gas formed expanded until the valves broke and then the gas spread into the atmosphere. The cloud of gas headed towards the slums of the poor neighborhoods in the Black Esplanade, hitting the inhabitants, killing 2,259 in a short time and poisoning tens of thousands more. After the gas leaked, the local doctors were not informed about its nature, effectively preventing medical treatment. The Indian government confirmed more than 3,700 victims, 3,900 disabled and 560,000 others less seriously affected. In 1994, UCC USA sold its Indian subsidiary to a local company. UCC USA itself was purchased in 2001 by Dow Chemical. The subsequent investigation on the accident revealed that no different safety procedures were applied. In 2006, the morbidity rate in the affected areas was 2.4 times higher than in other adjacent areas and the wells were polluted up to 500 times the permitted limit.

Currently, thousands of tonnes of toxic chemicals lying in open containers or abandoned on the ground, in the absence of clean-up measures, continue to pollute the surrounding area. Some areas are so polluted that those who stay there for more than ten minutes risk losing consciousness. Most of the victims were affected by pulmonary edema, but the gas caused many other disorders even after several years, such as genetic malformations in newborns. Many court cases are still pending, both in the United States and in India. The first agreement on economic transactions was reached on February 4th, 1989, when the UCC USA compensated (with 470 million dollars) part of the damage caused by the disaster (much less than the initial request of 3 billion dollars). Very little money has reached the survivors, and the people living in the area still feel betrayed by Union Carbide and their politicians: on every anniversary of the tragedy, the effigy of Warren Anderson and the Indian politicians are burned. Warren Anderson (deceased in 2014), was CEO at the time of the disaster. At the time of his death, an arrest warrant issued by Indian justice was still pending against him. In July 2004, the Indian Supreme Court ordered the government to compensate the victims and their relatives through a fund of \$330 million. In 2010, an Indian court issued a guilty verdict of manslaughter for gross negligence against eight former Union Carbide executives. The sentence (a maximum of two years in prison and a fine of 100,000 rupees) was judged derisory by activists and civil society. The activists asked Dow Chemicals to clean up the area from toxic waste and lobbied the Indian Government to demand much more substantial compensation. The company has never cleaned the plant and its surroundings are full of hundreds of tons of toxic waste. Environmentalists claim that this waste is a potential danger in the heart of the city and contamination could lead to slow poisoning humans, damage the nervous system, liver and kidneys. Studies have shown that cases of cancer and other diseases have skyrocketed in the area after the disaster.

Chernobyl (1986)

At about one o'clock in the night of April 26th, 1986, 18 kilometres from the city of Chernobyl (in the northern part of Ukraine that was still part of the Soviet Union), the V.I. Lenin nuclear power plant was shaken by an explosion. The plant alone produced 10% of the country's electricity. This is the most serious

nuclear accident and the number of victims is still being defined. The IAEA classified it as a catastrophic event of the highest level, like the case of the Fukushima power plant in March 2011.

That night, safety tests were underway on a reactor (no. 4) on which some safety devices were disabled. But during the test, reactor 4 exploded, causing violent pressure from the vapour that was released and blew the lid of over 1,000 tons that sealed the core. The explosion caused a fire that dispersed radioactive isotopes into the air and released a huge cloud of radioactive material and graphite. 336,000 people had to be evacuated immediately. In the following days, the cloud, pushed by the wind, covered thousands of kilometers, covering the entire European peninsula, first in the North West to England, and then in the South East, covering Czechoslovakia, Hungary, Yugoslavia, Austria, Italy, Switzerland and South East France. Between May 4th to 6th the cloud returned to the East (Ukraine, Southern Russia, Romania, Moldova, the Balkans, Greece and Turkey). All areas where it rained were considered to be at risk because the soil was contaminated. The emission of radioactive vapour only stopped on May 10th.

On the same day, in Rome, 200,000 people took to the streets to demonstrate against nuclear energy in Italy, which was abandoned the following year by popular referendum. The Russian government, pending the accident, kept the other three reactors running to keep supplying electricity to the country.

In 1991, a fire in reactor no. 2 feared the worst and was declared damaged, then decommissioned. In 1996, reactor no. 1 also ceased the activity and on December 15th, 2000, the Ukrainian President Leonid Kučma switched the reactor no. 3 off on live television.

Today, reactor no. 4 has been protected by a concrete and steel structure to prevent further radioactive contamination of the environment. In the years following the disaster, about 600,000 people were responsible for the removal of debris and decontamination of the site. In a few months, the military and civilians in charge of the construction of the sarcophagus (about 240,000 people) worked on the site of the accident exposing themselves to very high radiation. The sarcophagus was built for the urgent need to cover tons of radioactive material. But every year, due to the poverty of used materials, new leaks open in the structure. In February 2013, a part of the roof of the turbine room adjacent to reactor number 4 collapsed under the weight of snow, causing an immediate evacuation of the workers. In 2016, when the safety deadlines expired, a new, safer structure was built to replace the old sarcophagus. In March 2020, the second sarcophagus caught fire. After years, completely different reports can be read about this disaster, ranging from estimates of 30 victims to hundreds of thousands of deaths.

In 2003, the UN convened the Chernobyl Forum, where it was established that only 65 deaths were confirmed, but a further 4,000 presumed victims of leukaemia and cancer, but they were impossible to trace directly back to the accident. Many participants included the WHO, the Higher Institutes of Health of Russia, Belarus and Ukraine, Unscera (UN Scientific Committee for the Study of the Effects of Ionizing Radiation), IAEA, FAO (*Food and Agriculture Organization*). *Among the victims are two workers who died instantly, one from coronary thrombosis. 28 of the rescuers found acute radiation syndrome. In addition, in the years between 1987 and 2005, part of the population developed thyroid cancer. See Acts of the Chernobyl Forum.*

The European Green Party drew up a report that quantified the victims in 60,000 in the world population. Greenpeace estimates up to 270,000 victims and 6 million cancer deaths worldwide.

In August 1986, a closed-door trial was held to convict the plant director Viktor Bryukhanov and chief engineer Nikolai Fomin for criminal negligence (10 years of hard labour), deputy chief engineer Anatoly Dyatlov and chief supervisor Boris Rogozhkin for abuse of power (5 years), supervisor Alexander Kovalenko (3 years) and inspector Yuri Laushkin (2 years). But in 1991 the responsibility fell on the first two only. In civil cases, 7 million people received compensation.

Currently, Pripyat (the village closest to the power station) shows the signs of radiation in the flora and fauna: an entire pine forest died, becoming reddish-coloured (taking the name of *Red Forest*) and the animals of the first generation reported genetic malformations, followed on subsequent generations with reduction of the brain with possible flattening of the cognitive capacity.

Ilva of Taranto (2012)

The Ilva case is the most striking example of the conflict between certain fundamental human rights, such as the right to work, the right to health and a healthy environment on one side and the right to work and economic development in a country like Italy.

Ilva, founded in 1961, is the largest steel mill in Europe and its problems concern particularly its Taranto plant (the largest) where the polluting emissions of the production site have caused the death of an unspecified (but very high) number of workers in the recent decades.

The first investigations and legal action began in the 1980s for serious pollution-related violations. The proportions of the health and environmental drama of the Ionian capital were known from the early 1990s, as there was a considerable increase in mesotheliomas, leukaemias, cancer and thyroid diseases.

Although there were such worrying signs, the institutions proved to be immobile and at large: it was only on July 26th, 2012 that the judiciary power intervened to seize the facilities without the right of use, based on the accuse of environmental disaster and other serious violations.

Some precautionary measures were applied and some of the company's top management were arrested, including Emilio Riva (at the time president of Ilva), his son Nicola (his successor), the former director Luigi Capogrosso, the head of the *coking* department Ivan Di Maggio and the head of the Agglomerate Area Angelo Cavallo.

The accusation was of culpable and malicious disaster, food poisoning, malicious failure to take precautions against accidents at work, aggravated damage to public property, spillage of dangerous substances and air pollution.

However, since Ilva has always played a fundamental role for the Italian economy, the State tried to keep the company's productive activity going on: special laws were therefore passed to circumvent the permitted levels of pollution, postponing the deadlines within which the company had to be brought into compliance with environmental standards.

With the Ministerial Decree of January 21st, 2015, an Extraordinary Administration Procedure was opened with the appointment of a Board of Commissioners consisting of Piero Gnudi, Corrado Carrubba and Enrico Laghi. The extraordinary commissioners had the task of rehabilitating the company, both environmentally and economically, and then reselling it. In January 2016, the State launched an international public tender for the sale of the company, won in June 2017 by the Indian multinational Arcelor Mittal, which took partial control of the company thanks to an agreement with Minister Calenda. Under the terms of the agreement, Arcelor Mittal, through its subsidiary Am Investco, rented Ilva, forcing to proceed with its acquisition, and entered into negotiations with the extraordinary commissioners who have led the company since 2015. Even today, the company is still in joint extraordinary administration.

There are about 14,000 employees who would risk their jobs if Ilva closes down. And thousands of those who work in Ilva's supply chain, which includes dozens of companies would close either; moreover, the steel produced by Ilva means that it is not necessary to turn to foreign steelworks with higher costs.

In July 2018, the Prime Minister Conte asked the Anti-Corruption Authority (ANAC) to investigate the regularity of the tender procedure, while the Minister of Economic Development Luigi Di Maio started a series of meetings on the issues about the great crisis of the company, the employment situation and the continuing negative environmental impact. In the meantime, ANAC identified several critical issues concerning the acquisition procedure by Arcelor Mittal concluded under the previous government.

On July 24th 2018, Arcelor Mittal declared to accept all the requests made by Ilva's extraordinary commissioners. But the question of Ilva remains unsolved.

The problem caused by the Ilva of Taranto is probably the most serious environmental and health disaster in Europe. According to court reports and the same statements of the college of commissioners, 4,159 tons of dust, 11,000 tons of nitrogen dioxide and sulphur dioxide were released into the environment, causing the deaths of 11,550 people in seven years, who died mainly for cardiovascular and respiratory problems.

The Port of Marghera (1994)

Since 1917, Porto Marghera has been a key industrial hub for the development of Italy, involving thousands of workers from all over Northern Italy, leading Venice to hold the leadership in the mechanical sector in the Veneto region for the processing of non-metallic minerals and in the chemical sector.

In 1953, the industrial area, in which SADE (Società Adriatica di Elettricità) excelled, was flanked by a vast chemical area, a gigantic plant divided into operational sections, all coordinated by Edison's unified management, which in fact started production in the petrochemical sector: its development did not stop, thanks to the continuous modernization of the plants and industrial expansion. In 1883 the first Italian thermoelectric power plant that provided the public electricity distribution service came into operation. Based in Milan, Edison expanded considerably from the first post-war period onwards into other sectors, particularly the chemical sector. Montecatini was born in 1888 in Florence to exploit the local copper mines and, in 1910, it turned towards the chemical industry, in particular in the production of fertilizers. In 1936, together with the Italian State, it founded ANIC for the production of petrol and oil refining.

In 1966, the area expanded even further, when Montecatini and Edison merged into Montedison, occupying and owning 84% of the industrial area.

In addition, in the 1970s, Montedison accounted already for 80% of the Italy's chemical production. Montedison is linked to the deaths of 157 workers and various environmental damages caused by the industries to the lagoon, to the physical and moral damage suffered by the families of workers who died or were seriously ill: this is why the history of the company is linked to the criminal trial that has affected it for years, since 1994. Montedison has collapsed into a self-destructive crisis paid mainly with large amounts of public money, and has caused the poisoning of workers and the population of a vast territory with all sorts of toxic and harmful substances. This is why Porto Marghera is also called the biocide and ecocide triangle.

In the early 1970s, workers knew nothing of the risks they used to run every day in the CV processing departments (where VCM, vinyl chloride monomer, was processed): until 1974, rumours about VCM were not yet about the dangerousness of the substance in relation to possible tumour outcomes; until then, the fear was due to gas leaks, possible explosions and other accidents. The process that began in 1994 was the result of a series of tensions and fears accumulated over the course of twenty years. It was only in 1974, during a trade union meeting, that the risk of the dangerousness of the substance processed in some Petrochemical plants was feared for the first time. It emerged that the death of Ennio Simonetto (day supervisor of the CV 14-16 department) in 1972, had been caused by hepatic angiosarcoma, a rare tumor associated with VCM. It was the first Italian case and, at the time of his death, no one had yet linked the angiosarcoma to VCM, because Montedison researchers had not informed the workers of the results of their studies. In 1974, the oncologist Cesare Maltoni, during the well-known trade union meeting held in the Petrochemicals shed, confirmed the association of the damage from CVM with the deaths of some workers employed at the B. F. Goodrich of Louisville in the United States.

But it was only in 1994 that the preliminary investigations and the first technical-scientific reports of the experts appointed directly by the Public Prosecutor's Office began. In November 1996, the Public Prosecutor's Office filed a petition for the Montedison top management to be put on trial, which revealed an impressive number of injured parties. Other public bodies and organisations were also asked to join them as plaintiffs: the municipality, province, region, WWF, Greenpeace, Lega Ambiente, various trade unions and the Medicina Democratica movement.

The trial, which began on March 3rd, 1997, lasted until the Court of Cassation, whose sentence was issued in May 2006; the outcome confirmed the previous sentence of the 2004 Appeal and definitively abandoned the grounds that had acquitted all the defendants in the First Degree.

The First Degree judgement contains the expert opinions and studies: the judges did not hold the defendants responsible for culpability, since the expert opinions showed that there was no scientific proof of a CVM-tumour link. The experts' opinions dealt mainly with the possible existence of the cause-effect relationship between the substance and carcinogenesis. The problem was tracing the damage caused by exposure to carcinogenic materials and reconstructing the individual steps, all of which were of chemical and biomolecular nature.

If it is necessary to establish the existence of a cause-and-effect relationship (in the present case, between toxic substance and cancer), the nomological-deductive reasoning is used, which is essentially based on the use of a general law built on a scientific basis. But if there are no general laws to refer to, with high statistical frequencies (higher than 80-90%) it is common to believe that there is a high probability that a specific correlated effect is obtained from a given phenomenon. All studies carried out in Europe and in the United States concluded that the association between VCM exposure and liver cancer existed. Lately, studies of tumours and liver and lung diseases of workers in Porto Marghera during the 1950s and 1960s confirmed that VCM was the trigger for angiosarcoma and hepatocarcinoma. Other epidemiological studies also confirmed a strong association between exposure to VCM and liver cancer before 1974, as well as the onset of lung cancer in baggers. The expert opinions are attached in full in the First Degree judgement (Court of Venice, judgement of 24.10.2003).

The studies diverged on the other three target organs: the lungs, the brain and the lymphatic system. But the study in Porto Marghera found that there had been a significant increase in lung cancer among baggers. And, although the experts had established a binding link between liver disease and exposure to VCM, the Court based its findings on the opinion of the experts and defense consultants, concluding that hepatopathies were associated not with exposure to VCM, but with alcohol consumption or viral hepatitis, as well as body overweight, diabetes, non-alcoholic steatohepatitis, iron hepatic accumulation and celiac disease (all factors that usually increase tumor risk). Only Raynaud's Syndrome was recognized as due to microtrauma caused by chemicals like VCM. The Supreme Court finally sentenced for the conviction of five Montedison executives, but other charges lapsed. In the following two degrees, the reasoning of the Court of First Instance was rediscussed, to the point that acquittal became conviction: it was not the causal link that was decisive in the attribution of guilt, but the parameter of risk.

"The Court of Cassation," wrote the Court of Cassation, "notes that the measure of due diligence is related to the predictability of the event which must be recognised on the basis of the best science and experience present in a given field and at a precise historical moment" (Cass. section IV pen. 06.02.2007, no. 4675).

Predictability must concern an event "which can concretely and effectively occur, and not an event of generic content or potential in a mere hypothesis. The predictability of an event can be formulated only when there are scientific laws of coverage, which allow to establish that a certain action can achieve certain effects". The Supreme Court continues, according to the reasoning followed in the First Degree: "there is no liability for fault when the agent does not have the possibility to represent to himself the exact developments of the damaging action, but certainly the type of consequences to which his negligent action may give birth". Finally, the Court also held that the employer's adaptation to new scientific knowledge must be timely, and becomes payable when such notions reach a high degree of solidity: this happens when the relative scientific heritage becomes universally consolidated. Therefore, guilt must be excluded before 1974, because the cancer event became foreseeable only in that year, when Montedison took all the appropriate measures to eliminate or minimize exposure. However, the Second Degree of Judgment overturned the above conclusions, stating that the parameter of assessment of guilt is in the acceptance of risk and the agent is not required to know the causal mechanisms of the substance.

Unlike in causality, predictability must be assessed with reference to the notions known or knowable at the time the action was implemented. VCM is now included in Presidential Decree 303/1956, which applies to industrial processes related to toxic or infectious or otherwise harmful substances. Therefore, it is a substance whose toxic or harmful nature was already recognised by law in 1974.

The harmfulness of the CVM was not to be found among scientific theories, but in the Italian law itself and the judges of the Appeal stated that "*the relevant knowledge is not only the knowledge spread among specialists, let alone the advanced knowledge of certain research centres, but it is the knowledge that constitutes a widespread heritage since a certain date*".

In the first degree, the judges had considered scientific knowledge alone, while the Supreme Court ruled that the threshold beyond which the agent can foresee the harmful consequences of his action is not the scientific certainty, but the probability (or even the mere possibility) that such consequences may occur.

Consequently, the Montedison top managers were held responsible, as they had to act not on the basis of certainties, but on the scientific knowledge already known before 1969. The same Montedison corporate documents recognized the toxicity of these substances at the end of the 1950s.

Consequently, the serious damage to the health of workers exposed to VCM (a toxic substance recognised by law) was foreseeable and implied the duty to adopt the necessary precautions for the protection of human health, a constitutionally guaranteed primary right (art. 32 of the Italian Constitution).

Nuclear Tests and the Case of North Korea

Nuclear tests are explosions of devices in order to determine their range, explosive capacity and effectiveness, especially in the design phase for military purposes. These can be weapons of mass destruction and are divided into: atmospheric, underground, above atmosphere and underwater.

The carrying out of these tests also implies a subdued political declaration towards the other States, warning them of the diplomatic consequences of the constitution of nuclear weapons: actually, the atomic tests were over time, marked mainly by the tensions between the two superpowers protagonists of the Cold War, USA and USSR.

After the end of the Second World War, the nuclear powers led by the USA and the USSR multiplied their nuclear tests.

The first nuclear test in history took place on July 16th, July 1945 in the Almagordo desert in New Mexico under the American *Manhattan Project*.

After two months, uranium bombs were dropped on Hiroshima and Nagasaki. These raids have been followed by a series of American nuclear tests called the *Tumbler Snapper*.

In 1945, the atom became the centre of international relations, kick-starting the atomic and nuclear era. The first tests were carried out mainly on open ground or in the atmosphere, in order to prepare new nuclear weapons and assess their radioactive failure (the range and power is greater if the device is exploded on earth or on sea surface).

All the major powers have tried this type of test: USA, USSR, UK, France, China, India, Pakistan and North Korea. Following, there are some cases of nuclear tests around the world made in the last seventy years: Soviet Union, Semipalatinsk Polygon; Kazakhstan, 19 August 1949; United Kingdom, Montebello Island, Australia, 3 October 1952; France, Reggane Oasis in the Sahara Desert, Algeria, 13 February 1960; China, Taklamakan Desert, Xinjiang Uyghur Autonomous Region, October 16, 1964; India, Rajasthan, May 18, 1974; Pakistan, Chagai Hills, Belucistan, Pakistan, May 28, 1998; North Korea, unknown site of Punggye-ri in Kalju County, October 9, 2006.

It is estimated that since the first nuclear device detonated in 1945 and up to 1996, approximately 2,000 nuclear tests have been conducted. According to Greenpeace, there were about 2044 tests conducted until April 1996, which led to the release into the environment of about 3 800 kg of plutonium and about 4 200 km of uranium.

The peak of nuclear testing was reached during the 1960s, a period marked by the Cuban missile crisis. The resolution of the crisis allowed to open a dialogue between the two nuclear powers, giving rise to the political season known as *Detente*.

The tensions were curbed with the withdrawal of some nuclear missiles placed in Cuba by the Russian government and the withdrawal of many missiles undermined USSR security by the United States.

Finally, in 1963, the United States, the United Kingdom and the USSR signed the *Limited Test Ban Treaty (LTBT)* in Moscow, which banned nuclear tests in the atmosphere, outer space and underwater spaces, but still allowed underground tests.

Despite this, the advance of nuclear proliferation did not stop: in 1964 it was China's turn, followed by India in 1974 and Pakistan in 1998. The Marshall Islands and French Polynesia have been the favourite locations of France and the United States for the development of various nuclear weapons. The following thirty years (1966-1996) France continued underground testing at the atolls of Mururoa and Fangatuafa.

Now, the Marshall Islands and Mururoa are even more radioactive than Chernobyl, causing an infinite number of diseases to humans and wildlife, and inexorably affecting nature within a radius of thousands of kilometres.

The Novaya Zemlya Archipelago in the Arctic Ocean was the main theatre of Russian experimentation. As far as Israel is concerned, its position remains ambiguous because, although it has a nuclear arsenal, it does not interact diplomatically with other world powers.

South Africa had an atomic arsenal since 1982, dismantled then in the 1990s, but without ever conducting any kind of tests.

Uncertainty remains about some incidents that may have not been reported by the related authorities. The best known of these is the Silingo Incident, an explosion (apparently of nuclear origin) observed in the South Atlantic and whose perpetrators were never identified. It may have been a nuclear test conducted by either South Africa or Israel, or both: these two nations have never carried out official tests, nor signed the relevant treaties.

To stem the tests, in 1968 the first Treaty on the non-proliferation of nuclear weapons was signed in Moscow, with the signing of the USA, the USSR and the Great Britain.

Subsequently, the 1974 TTBT (*Threshold Test Ban Treaty*) limited underground explosions to 150 kilotonnes.

On the basis of the first Nuclear Non-Proliferation Treaty of 1968, a new treaty was proposed on September 24th, 1996, the CTBT (*Comprehensive Test Ban Treaty*), but by now it has not yet entered into force: the treaty was signed by 183 countries, but ratified by only 162; to date, it has not yet been signed and ratified by some key nuclear countries (China, North Korea, Egypt, India, Israel, Pakistan and the United States). The goal is to completely ban nuclear testing and armament.

In the first years of experimentation, explosions were conducted with little regard for the environment due to a lack of perfect knowledge of the long-term effects. But today we know that when a nuclear device explodes, it disperses an enormous amount of radioactive material into the environment, causing very serious damage to human health, including death, mutation or alteration of human and animal cells, with a significant increase in cancer and serious diseases.

In Italy, nuclear power plants have been decommissioned for years, but the problem of stochastic effects resulting from exposure to radon remains. These effects are still monitored in Italy by Ispra, according to the strict criteria established by the CTBTO (*Comprehensive Nuclear-Test-Ban Treaty Organization*).

The current controversial situation with North Korea arose in the 1950s, when the North Korean government began to develop atomic energy research and take on scientific cooperation agreements with the Soviet Union. In the 1970s and 1980s, Pyongyang gradually emancipated itself from Soviet support and began to use national technologies. The period from 1985 to 1992 marked the gradual inclusion of North Korea in international nuclear governance. But after signing the NPT in 1991 (Joint Declaration on the Denuclearisation of the Korean Peninsula) and the Safeguard Agreement with the IAEA, the North Korean government broke off the collaboration relations during the following year, preventing the access of control over the waste deposits carried out periodically by the IAEA. In addition, North Korea threatened to withdraw from the NPT.

In 1994, the *Agreed Framework* was approved, committing North Korea to suspend the development of nuclear reactors, while the United States undertook to provide North Korea with assistance in the construction of two light water reactors. But, in 2002, the American *Intelligence* discovered the programme of acquisition of *know-how* for the production of enriched uranium given to North Korea by Pakistan. And following the suspension of oil supplies by KEDO (International Union of Countries aimed at containing the Korean nuclear armament, among which, Europe), North Korea re-opened the nuclear plants temporarily frozen by the *Agreed Framework* and announced its withdrawal from the NPT.

The multilateral dialogue (known as *Six Party Talks*) took over from the bilateral negotiations between the United States and North Korea. It was also attended by China, South Korea, Japan and Russia.

In 2004, North Korea declared its willingness to abandon its nuclear programme to rejoin the NPT and to be subject to IAEA controls, but did not renounce research activities related to the civil application of nuclear energy. The introduction of sanctions against North Korea by the United States in 2005/2006 constituted a valid reason for a re-activation of relations with the United States. In response to the sanctions, North Korea carried out several missile and nuclear tests. North Korea has conducted a total of six nuclear tests: one in 2006, one in 2009, one in 2013, two in 2016 and one in 2017.

The *Six Party Talks* resumed in 2007 and North Korea undertook to close the Yongbyon nuclear power plants, as also verified by the IAEA; but in 2008, negotiations reached a new breaking point, as Pyongyang refused a comprehensive IAEA inspection of North Korea's nuclear sites.

In 2009, North Korea carried out a missile test in violation of UN Resolution 1718 and sanctions were reintroduced. As a result, Pyongyang again announced its withdrawal from the *Six Party Talks*.

In recent years, North Korea has carried out further tests without being part of the world disarmament programmes and in 2016 it conducted two tests, irrefutable proof of the rapid evolution of Pyongyang's nuclear and missile programme. The two tests in 2006 caused two earthquakes of magnitude greater than 5. In 2017 there was a final similar episode compatible with a nuclear explosion, which the CTBTO estimated at 250 kilotons.

INTERNATIONAL ENVIRONMENTAL LAW

The foundations; The sources of international law; The first phase (1958-1972) and the Stockholm conference (1972); The second phase (1972-1987) and the first three EAPs (1973-1986); The Barcelona Convention (1976); The Spanish *Ley de Reforma* (1977); The Schengen agreement (1985) and the Single Act (1986); The third stage and fourth EAP (1987-1993); The Maastricht treaty (1992): affirmation of European environmental policy; The UNCED Rio convention, UNFCCC and Agenda 21 (1992); The fifth EAP (1993-2000); UNCOLOS: The law of the sea (1998); The Helsinki convention (1996); The fifth phase, the treaty of Amsterdam (1999) and the Nice charter (2000); The Kyoto protocol (1997-2005); The Lisbon strategy (2000); The Green Paper about CSR (2001); The Aarhus convention: public participation in environmental matters (2001); The sixth environment EAP 2010 (2002-2012); EC Directive 2004/35/EC: prevention and remedy of injury (2004); The Green Paper 'Towards a future Maritime Policy for the Union. Oceans and seas in a European vision' (2006); EC Directive 2008/99/EC: protection of the environment through criminal law (2008); The Lisbon treaty (2009); The seventh EAP (2013-2020); The *Non Financial Reporting Directive* (2014); The REFIT platform (2015); The Paris protocol (2015); The COP24 in Katowice (2018); The G20 in Osaka (2019); The COP25 in Madrid (2019).

The Foundations

After the Second World War, which had memorable effects throughout the planet, the need was felt to devise a system capable of preserving the newly regained peace.

On the ashes of the Habsburg and Ottoman empires that the First World War had dissolved, a new geopolitical order was put in place that completely upset the previous one. An important step towards peace was the Paris Conference of 1919 in which the four winning powers participated: Italy, France, Great Britain and the United States. This meeting resulted in the ratification of the Treaty of Versailles in 1920, in which the first foundations for maintaining peace in the world were laid. In it, the principle of self-determination of peoples was also affirmed and the General League of Nations (now UN, since 1945) was conceived, a supranational body that was able to watch over the precarious balance that had just been reached. In 1945, the UN was definitively established by statute, which laid the foundations of post-war international law. But the UN did not initially deal with environmental protection, since at that time the principle of the sovereignty of States over the territorial, air and maritime spaces under their jurisdiction prevailed.

For areas located outside national jurisdictions, there was freedom to use and exploit the common areas, without observing any particular behaviour that would not pollute and, therefore, protect the environment.

The environmental treaties of the 1950s and 1960s were the first timid manifestations of an emerging ecological consciousness (but always from the classic utilitarian point of view), such as the Paris Convention of 1950 on the Protection of Birds, or the London Convention of 1954 relating to specific phenomena of pollution of marine waters by oil.

International environmental law is a recently created subject, born thanks to some epic conferences that laid the foundations for an increasingly complex protection of the landscape and biodiversity.

Expressing a primary need of the time, in his famous 1950 declaration, the French Foreign Minister Robert Schuman expressed the deep aspiration for peace of all peoples, which in his view had to start with the control of French and German industrial production through a common authority, considering essential the future constitution of a common military force to guarantee its supervision.

Thus, in 1951, the ECSC, the European Coal and Steel Community, was established, with the subscription of France, Germany, Italy and the Benelux countries. It consisted of the following bodies: Special Council of Ministers (with representative function), High Authority (independent command decision centre), Common Assembly and Court of Justice.

In the following years, it was decided to found a supranational defence organisation, the CED, which actually was not formed because of the French Senate's vote against it.

In 1955, at the Messina Conference of the ECSC, the topics dealt with the common market for goods, the customs union, transport, production and nuclear energy.

The foreign ministers of the ECSC formed the European Economic Community (EEC) and the European Atomic Energy Community (known as Euratom) with the two Treaties of Rome in 1957.

The EEC dealt mainly with competition rules and the common market in general, while the Member States retained their internal political power and national sovereignty.

At that time, the European Parliament was not democratically elected by the citizens as it is today, but by the national parliaments. The turning point in electoral matters came at the end of the 1970s, when the European Parliament and the European Court of Justice had their own decision-making powers. With this important change, the centre of gravity of the EEC shifted from the interests of goods and capital to those of people and their rights. These positions were definitively sanctioned with the Treaty of Maastricht in 1992, confirming the structural change of the European Community from an economic system to a system with a social base (the name was in fact changed from *European Economic Community* to *European Community*, just to underline that the subsequent federal policy would deal with other sectors, besides the economic one).

Since 1947, the UN has set up 5 Regional Commissions for each macro-area, which deal with the transposition of UN standards, guidelines and conventions. These commissions supervise and participate in international conferences and are: UNECE (*Economic Commission for Europe*), ECA (*Economic Commission for Africa*), ESCAP (*Economic and Social Commission for Asia and the Pacific*), ECLAC (*Economic Commission for Latin America and the Caribbean*), ESCWA (*Economic and Social Commission for Western Asia*).

The Sources of International Law

Let us briefly recall the sources of international law governing relations between states. They are divided into primary and secondary.

At the first level, relating to primary sources, we find the customs, which are applied *erga omnes*; the secondary sources of international law are treaties, conventions, protocols and they are all binding. They are usually issued by the UN, to which individual states and the European Union may or may not accede.

Primary and secondary sources are also referred to as *Hard Law*, as they are binding rules. Besides, there is a defined part of *Soft Law*, made up of non-binding propositions, but with a high moral value for States: it includes declarations of principle, resolutions, recommendations and world charters.

In order to be translated into binding domestic law within States, international standards must be transformed into domestic law by the transposition formula. This does not apply to customs, which are automatically accepted, being recognised by universal international practice.

Specifically, the Conventions create binding effects only between the Contracting Parties to the Agreement and only when a certain number of States request ratification and transposition of their content.

As specified in Article 10 of the Italian Constitution, the special procedure for transposition with an enforcement order applies to secondary rules of international law.

There are only two binding principles of international law: the prohibition to pollute another state and the obligation to cooperate, which also is applied to territories without sovereignty, *global commons* (high seas, oceanic soil and subsoil, space, moon).

The first case of international conflict jurisprudence concerns the Canadian foundry Smelter in 1941, which polluted US territory and air with sulphur dioxide emissions. The International Court of Justice, which ruled against it, established the principle that no state has the right to use its territory in such a way as to create damage in another state. This principle was first reconfirmed by the Stockholm Conference in 1972, then reaffirmed by the 1982 World Charter of Nature.

European Union law is a separate branch of international law: its acts are essentially addressed to the Member States and the subjects of national law (the national legislators). The sources of EU law are also divided into primary and secondary: the Treaties and the case sentences of the European Court of Justice fall within the first group; acts of the EU institutions are part of the second group. The sources are also distinguished by their effectiveness, which can be binding (regulations, directives and decisions) or non-binding (recommendations and opinions).

European environmental matters have speeded up considerably, especially since the 1990s, when they began to contribute extensively and creatively to international law.

The First Phase (1958-1972) and the Stockholm Conference (1972)

As far as the environmental sector is concerned, we can say that the history of Europe is divided into different phases and programmes, whose time cycles do not overlap and must be kept separate.

1958-1972

The **first phase** covers the period from the entry into force of the original treaty establishing the EEC until 1972: although there was no full awareness of the environmental issue and no real policy dedicated to it, some first special directives were adopted (Dir. 1967/584/EEC on the classification, packaging and labelling of dangerous substances, Dir. 1970/157/EEC on noise pollution and Dir. 1970/220/EEC on pollutant emissions from motor vehicles).

With the explosion of attention to the environment in the years 1968-70, the United Nations conferences and committees of the European Community (now the European Union) on environmental issues multiplied: the debates concerned the harmonization of the policies and regulations of the various countries not so much for purely environmental purposes, but rather to avoid distortions of economic competition and to straighten out an economic system that also took environmental concerns into account.

In the 1960s, a number of books had appeared denouncing the need to contain world population growth. The Catholic Church had also taken a position on the subject, setting up a commission (*Iustitia-et-pax*) which was very attentive to environmental problems, although in relation to the demographic problem, the Church has always been firmly opposed to birth control. The Church's position on nuclear energy and nuclear weapons was also ambiguous. The Holy See is not a member of the United Nations, but is a member of many agencies (FAO, IAEA, etc.) and participates in their conferences.

The culmination of the issue was in 1972 thanks to the Club of Rome (a circle of managers, scientists and politicians from the various developed countries) who financed research on the problem, bringing to the press a volume entitled *The Limits to Growth*. Its content focused on the need to stem demographic growth, the growing exploitation of natural resources, the containment of consumption, waste and waste produced by galloping industrialism. This writing raised a vast debate. The report, written by 17 researchers at the Massachusetts Institute of Technology (MIT), was based on a mathematical and formal model of the world that investigated five areas: increasing industrialization, rapid population growth, widespread malnutrition, use of non-renewable resources and pollution.

The warning of the Club of Rome was soon received by the United Nations, which in 1972 organized the conference *Man and the Environment* in Stockholm, which the business world soon opposed with a counter-ecological movement.

The UN Conference on the Human Environment was convened by a resolution in 1968, born of the need for greater cooperation between States to protect the environment in which human beings live. It was attended by 112 UN member states, UN specialized agencies and other international organizations.

In line with the desire to continue cooperation between States in the field of environmental protection, at the end of the Conference a **declaration of principles** was approved, with non-binding legal value, but which represented a first point of reference for the negotiation of future multilateral agreements on the subject. The declaration presents an anthropocentric vision, which considers the environment as a place where mankind lives, not as an end in itself. From this declaration it emerged that mankind has a fundamental right to freedom and equality, to which corresponds the governmental responsibility to preserve the environment for both present and future generations. The declaration clarified the differences between developed and developing countries, for two fundamental reasons: developed countries had contributed more to pollution than other countries; the latter also give greater priority to economic development needs in spite of environmental ones.

There was a fierce reaction from industrialists based on the principle that no one like businesses possessed the knowledge and capital to produce clean technologies and clean goods; harmful accidents to humans and the environment had only been caused by unfortunate events.

The illegal building and occupation of the coasts of those years were possible thanks to inevitable compromises between economic power and government, often masked by the need to ensure employment, economic growth and the satisfaction of human needs with increasing quantities of goods.

The Second Phase (1972-1987) and the First Three EAPs (1973-1986)

1972-1987

The year 1972 opened the **second phase** which lasted in 1987. It marked a very important moment for the foundation of a real environmental policy. In the wake of the results of the first major world summit in Stockholm, the Community institutions were commissioned to draw up the first environmental protection policy document (**First Environmental Action Programme, EAP**, adopted at the Paris Summit by the EEC in 1972). Since then, a number of environmental action programmes have followed one after another, basically consolidating the centrality of ecological issues. But let us see the international legislative action of those years.

The first two EAPs (1973-1977 and 1977-1981) established two very important principles: 1) the **principle of pollution prevention** as a criterion to be preferred to subsequent recovery and restoration interventions; 2) the **principle of charging the expenses** for the prevention and elimination of pollution to the responsible party (the "*polluter pays*" principle). During this period, the first Community directives on environmental protection were issued: Directive 1975/442 on waste, Directive 1975/716 on sulphur content in fuels, Directive 1976/464 on dangerous substances in water, Directive 1978/319 on toxic and harmful waste, Directive 1979/409 on the conservation of wild birds, Directive 1980/778 on water intended for human consumption and Directive 1980/779 on air quality. In this second phase, in the absence of a specific legal basis for action to protect the environment, the adoption of the above legislation was based on Articles 100 and 235 of the EC Treaty.

The Third EAP (1982-1986) laid the foundations for a real environmental policy by providing, together with traditional measures to control and contain pollutants, a policy to prevent environmental damage by adhering to various protocols to contain pollution in the Mediterranean region (particularly, Decision 1977/585/EEC allowed the Community to accede to the Barcelona Convention for the Protection of the Mediterranean Sea against Pollution).

The Barcelona Convention (1976)

During the Third Phase, the following were issued: Directive 1982/501 on major accident hazards, Directive 1984/360 on air emissions from industrial plants, Directive 1985/210 on the lead content in petrol, Directive 1985/337 on environmental impact assessment.

The UN Convention for the **Protection of the Mediterranean Sea** against Pollution was adopted in Barcelona on February 16th, 1976. It was amended again on June 10th, 1995 and, over time, its mandate was extended with the annexation of other specific protocols.

The 22 Contracting Parties to the Convention (Albania, Algeria, Bosnia and Herzegovina, Cyprus, European Community, Croatia, Egypt, France, Greece, Israel, Italy, Lebanon, Libya, Malta, Morocco,

Monaco, Montenegro, Syria, Slovenia, Spain, Tunisia, Turkey) may, individually or jointly, take all necessary measures to protect and improve the marine environment in the Mediterranean Sea Area, in order to contribute to its sustainable development, committing themselves to reducing and combating pollution in the area, managing the marine and coastal natural resources and protecting the natural and cultural heritage.

For the purpose of cooperation between States, a system of cooperation between riparian countries in cases of emergency operates, interacting with each other in the field of science and technology and adopting common surveillance systems.

The Convention provides for an arbitration mechanism to resolve any disputes between the parties concerning the interpretation or application of the Convention.

Since the Barcelona Convention, a number of decisions have been taken, which have subsequently become Protocols to the Convention: these Protocols aim to extend the subject matter and scope to the coast, to introduce the precautionary principle “*polluter pays*”, to promote impact studies, to protect and preserve biological diversity, to fight against pollution caused by transboundary movements of hazardous waste, to manage access to information and public participation and integrated coastal zone management (ICZM).

1. The **Protocol concerning cooperation in preventing pollution from ships** and, in case of emergency, combating pollution from ships in the Mediterranean Sea (1977/updated 2004), introduces certain legal instruments relating to cooperation between the Parties in preventing and, in case of emergency, in combating pollution from ships in the Mediterranean Sea. It also aims to promote the development and application of international regulations adopted in the framework of the International Maritime Organisation.
2. The **Protocol for the Prevention of Pollution of the Mediterranean Sea** (1981/Aug. 1999) prohibits the dumping of waste (toxic organohalogen compounds and organosilicates, mercury, cadmium, plastics, crude oil, etc.) by ships and aircraft. Ships or aircraft used for governmental and non-commercial purposes are excluded from the scope of the Protocol. The discharge of other materials or types of waste (arsenic, lead, copper, zinc, chromium, nickel, containers, scrap, certain types of pesticides, etc.) is subject to prior approval by the competent national authorities. Furthermore, the Protocol prescribes a ban on incineration at sea, as well as the procedure to be followed in the event of a critical situation of an extraordinary nature. This Protocol provides for the cooperation of the Parties when the presence of large quantities of hydrocarbons and/or other harmful substances in the Mediterranean Sea (of accidental origin or resulting from a cumulative effect) constitutes a serious and imminent danger to the marine environment, the coasts or the interests (economic, health or ecological) of one or more Parties. This cooperation takes the form of emergency plans, combats marine oil pollution, provides to the monitoring and exchanging of information on the state of the Mediterranean Sea, the dissemination of information on prevention methods and the development of research programmes. The Protocol obliges all parties facing a critical situation to carry out the necessary assessments of the nature and extent of the accident, takes all measures aimed at reducing or eliminating the effects of pollution and informs the other parties of the assessments and actions taken, either directly or through the Mediterranean Regional Centre established by the Barcelona Convention.
3. The **Protocol for the Protection of the Mediterranean Sea against Pollution from Land-Based Sources** (1983) aims at preventing pollution of the Mediterranean Sea by discharges into rivers, emissaries, canals or other watercourses, or caused by any other source or activity in the territory of the Contracting States. The Protocol lists the substances whose discharge is prohibited and the factors to be taken into account for the elimination of pollution from such substances. It also lists the substances subject to authorization by the competent national authorities. The Protocol also provides for cooperation in research and information aimed at reducing or eliminating the substances concerned.

4. The **Protocol concerning specially protected areas and biodiversity in the Mediterranean** (1984/Aug. 1995) aims to safeguard the common natural resources of the Mediterranean region, to preserve the diversity of the genetic heritage and to protect certain natural sites by creating a set of specially preserved areas. The updated Protocol distinguishes specially protected areas (already provided for in the previous Protocol) from specially protected areas of Mediterranean interest. It provides for a number of measures to be followed by the Contracting Parties, including: a ban on dumping waste; regulation of the passage of ships; regulation of the introduction of any non-native or genetically modified species; any other national or concerted measures aimed at safeguarding the ecological and biological processes of the landscape. The Protocol provides for certain exemptions for certain traditional activities established on the local territory, which must not, however, compromise the conservation of protected ecosystems, nor the biological processes of ecosystem equilibrium; they must not lead to their extinction, nor to a substantial reduction in the species of animal and plant populations included in ecosystems worthy of protection. The annexes to the new Protocol include a list of common criteria to be respected by the Parties in order to choose the marine and coastal areas to be protected through the regime of specially protected areas of Mediterranean interest. The annexes also include a list of threatened or endangered species and a list of species whose exploitation is regulated.
5. The **ICZM Protocol** (Integrated Coastal Zone Management, ICZM), introduced in 2010, aims to establish a common framework for action. ICZM pursues the goal of sustainable development in coastal areas through a rational planning of activities, in particular: the preservation of coastal areas, ecosystems and coastal landscapes; the sustainable exploitation of natural resources; prevention and reduction of natural disasters and climate change; the improvement of cooperation. The Protocol also defines the general principles of integrated management, the modalities of its implementation and its instruments.

In 1972, United States of America, concerned for the quality of marine/coastal environments, created the first national regulatory instrument, the Coastal Zone Management Act. Integrated Coastal Zone Management is a dynamic interdisciplinary and interactive process to promote sustainable coastal zone management, taking into account the fragility of ecosystems and landscapes, activities and uses and their impacts. The integrated approach considers all aspects related to the coastal zone, including geographical, political, environmental, cultural, historical, urban and economic aspects. It involves the whole cycle of information gathering, planning and monitoring. Integrated management involves the collaboration and informed participation of all stakeholders and involves the interaction of all sectors involved, from administration to citizens: consultation is the method to be followed in the consultation process between the competent administrations, including regions and local authorities. The ICZM Protocol introduces some rules on land policy. It is the first international legally binding instrument for UN countries, even if it is inherent to a regional sea.

The Protocol regulates all the Italian coasts: these extend for about 7,400 km. and represent one of the main riches of our country. The MATTM (Italian Ministry of the Environment and Protection of Land and Sea), in order to overcome the fragmentation of competences between the different levels of government, has activated a collaboration between regions and local authorities in the preparation of programs and guidelines, with special consultation forums, in order to ensure adequate access to whom are interested in ICZM.

The Directorate General for Nature Protection of the MATTM is responsible for the application and General is responsible for a pilot project, the CAMP (Coastal Area Management Program), implemented within the Med Spatial Planning). The CAMP project foresees as analysis areas some of the most interesting stretches of the coast from a landscape and historical-naturalistic value point of view. In many other countries like Italy these resources are threatened by both natural and anthropic pressures, which put at risk their availability and quality. Its transnational configuration makes it possible to collaborate across national borders in the management of environmental risks. Among its tasks: it implements and encourages partnership projects across borders within the Mediterranean area, especially towards better

competitiveness and innovative capacity, promotes territorial cohesion and its accessibility. For example, at the European Union Sustainable Energy Week held in Brussels in 2015, 14 coordinated pilot projects on innovation and efficiency of renewable energies took part.

As a pilot project, the CAMP model has also been adopted by other States Parties to the Convention and is implemented through national co-financed projects.

Established for the first time in 1989, the CAMP Project is part of the activities undertaken by the contracting parties of the Barcelona Convention: it deals with the implementation of *ad hoc* strategies for the management of coastal zones on a sample basis, which are particularly significant, with a highlight on knowledge sharing. The Italian proposal distinguishes itself from other international CAMP experiences for being the first multi-area project. It concerns the following macro-areas: Area 1 (Tuscany and Liguria) and includes the coastal area between the northern border with Liguria, in the North, and Livorno in the South, including the Tuscan Archipelago (excluding Giglio Island, Giannutri and the other smaller southern islands); Area 2 (Emilia-Romagna), which includes the coastal area between the mouth of the river Po in Goro in the North, and the mouth of the river Rubicone in the South; Area 3 (Sardinia) comprises the coastal area between Capo Li Canneddi to the north, and Capo Galera to the south, including Isola Piana and Isola dell'Asinara; Area 4 (Sardinia) includes the area between Torre Pittinuri, Grotta Azzurra and the facing islands; Area 5 (Tuscany) includes the area between Principina a Mare, the northern boundary of the Maremma Regional Natural Park, and the southern boundary with the Lazio Region, including Formiche di Grosseto, Isola del Giglio and Giannutri.

CAMP Italy provides a first phase of study of the characteristics of the national territory for the identification of areas of specific interest.

At the end of the selection of the areas of interest, a feasibility study is carried out, which is then followed by the development of the actual project. One of the main goals is to test actions aimed at reducing critical issues, such as coastal erosion, loss of biodiversity and pollution.

The project foresees an online platform (e-CAMP) as a tool to store and exchange best practices among the various actors directly or indirectly involved in the project, through the sharing of technical documents, databases and e-learning platforms.

6. The Barcelona Offshore Protocol (to which the Union acceded by Council Decision 2013/5/EU) was introduced in 2011. It concerns the offshore exploitation of Mediterranean resources and protection against pollution resulting from exploration and exploitation activities on the continental shelf, the seabed and its subsoil. In the Mediterranean Sea, there are over 200 active offshore platforms harvesting fossil fuels and other mineral resources. In the event of an accident, they can pose a serious threat to the Mediterranean economy and its fragile ecosystems.

The Protocol covers a wide range of activities related to the exploration and exploitation of platforms: it provides requirements for the granting of permits, methods of removal of abandoned or disused facilities, use and disposal of harmful substances. The Protocol defines the criteria for liability and compensation for damage and regional coordination between the Parties to the Convention. States Parties are required, individually or jointly, to take all appropriate measures to avoid, reduce and control pollution resulting from exploration and exploitation activities, using the best available techniques. Responsibility for the implementation of the monitoring system shall be, in the first instance, the responsibility of the State Party.

The Spanish *Ley de Reforma* (1977)

The death of dictator Francisco Franco in November 1975 made possible the proclamation of King Juan Carlos I of Spain and the formation of a legitimate government. In 1977, the Government passed a Constitutional Reform Law in accordance with all the requirements of the *Leyes Fundamentales* by Francisco Franco.

This law, without introducing a formal constitutional-democratic system, created it by derogation from the previous dictatorial regime.

The law formally inserted itself into the previous system without upsetting it, but radically differed in its spirit, since it recognized fundamental human rights as inviolable (art. 1) and conferred exclusive

legislative power to popular representation (art. 2). The Spanish Constitutional Reform also adopted an electoral system inspired by democratic principles and proportional representation, absent since 1936, breaking with the centralist tradition begun in 1700 by Philip V of Spain. As a solution to the regional problem and the claims of the Basque and Catalan nationalist groups, the growing nationalism of Galicia, Valencia, the Canary Islands and Andalusia, created a model of decentralized state, in which each region became an autonomous community with its own government and parliament, regional courts and autonomous statutes.

Art. 45 of the Spanish Constitution of 1978 states: “Everyone has the right to enjoy an environment suitable for the development of the person, as well as the duty to preserve it. The public authorities shall ensure the rational use of all natural resources in order to protect and improve the quality of life and to defend and restore the environment, based on the indispensable collective solidarity. For those who violate the provisions of the previous section, under the terms established by law, criminal or, where appropriate, administrative sanctions shall be established, as well as the obligation to repair the damage caused”.

This article is very important, as it is the first to introduce environmental protection into a Constitution, granting the right to every person to be able to use and, in a speculative manner, to preserve the environment.

The provision to protect the environment in such an incisive way within a Constitution was born with the greater sensitivity developed following the Stockholm Declaration. Later, other states imitated the Spanish model. This article lays the legal foundations for the protection of sustainable development, seen as a mediation between the rights of economic freedom on the one hand and cultural protection on the other; it is a notion of progress that is not to the detriment of natural assets and which obliges the legislator to create a body of legislation aimed at sanctioning (criminally or through administrative measures) anyone who damages the environment, as well as compensating the community for the caused damage.

The Schengen Agreement (1985) and the Single Act (1986)

In 1985, at the end of the Third EAP, an agreement was signed in Schengen between the Benelux governments, Germany and France for the gradual removal of controls at their borders, thus providing for the creation of a common area. The subsequent ratification of the agreement took place in 1990 with the Schengen Convention: together with the 1985 agreement and all the rules adopted on the basis of the two combined texts, it forms the Schengen acquis, which since 1999 has been integrated into the institutional and legal framework of the European Union by virtue of a protocol annexed to the Treaty of Amsterdam. The Schengen Area now includes European states and other non-EU states (Iceland, Norway, Switzerland and Liechtenstein; to these are added the Principality of Monaco, San Marino and the Vatican) that have formed a single external border, within which the free movement of goods and people is guaranteed, thus functioning (from the point of view of international movement) as one large country. The United Kingdom and Ireland have not acceded to the Convention on the basis of an opt-out clause. With the Single Act of 1986, the environment took on the status of an asset protected by the Community, later becoming the subject of a real Community policy with the Maastricht Treaty of 1992.

The Single European Act signed in Luxembourg in 1986 amended the 1957 Treaties of Rome in order to complete the construction of the free internal market and to lay the foundations for a Community policy. It was the Single Act itself that introduced for the first time in Europe an explicit Community competence in environmental matters, introducing Title VII (Art. 130R, 130S, 130T). This Title (subsequently amended by the Treaty of Maastricht in 1992, then by the Treaty of Amsterdam in 1997 and finally by the Treaty of Lisbon in 2007), is still today the cornerstone of European environmental policy.

The Third Stage and the Fourth EAP (1987-1993)

From 1987 to 1993, the third phase of environmental policy was developed, as well as the Fourth EAP which, for once, overlapped. It was a period of intense international legislative production, beginning with the 1987 Brundtland Report, which finally coined the concept of sustainable development, still a result to be achieved and the backbone of the entire world intergovernmental activity. Economists and politicians chaired by Gro Harlem Brundtland of Norway, established a global agenda for change.

The 1987 Brundtland Report (also known as *Our Common Future*) is a document published by the WCED in which, for the first time, the concept of sustainable development was introduced, defined as “development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs”: a theme developed in the following years, yet a goal to be pursued and achieved in the coming decades.

This definition does not refer to the environment itself, but to the well-being of people in relation to environmental quality, in the name of the ethical responsibility of today’s generations towards future generations. This principle touches two central aspects of eco-sustainability: the maintenance of resources and the environmental balance of the Planet.

According to the Report, production activities can be considered sustainable when they do not alter the environment and remain viable for an indefinite period of time. This tends to guarantee the long-term profitability of the territory with limits of ecological, socio-cultural and economic compatibility.

The Report states: “Environment and development are not separate realities, but on the contrary are closely connected. Development cannot exist if environmental resources are deteriorating, just as the environment cannot be protected if growth does not consider the economic importance of the environmental factor. These are, in short, mutually linked problems in a complex system of cause and effect, which cannot be tackled separately, by individual institutions and with fragmented policies. A world where poverty is endemic will always be exposed to ecological disasters of another kind. [...] Humanity has the possibility of making development sustainable, i.e. by ensuring that it meets the needs of present generations without compromising the possibility of meeting the needs of future generations”.

The concept of sustainable development implies the development of certain crucial tasks:

1. economic growth is revived by changing its quality and satisfying essential needs such as jobs and adequate supply of food, energy, water and hygiene;
2. ensure a sustainable demographic level by conserving and implementing resources;
3. reorient technological and management risks on the basis of this new overview.

The consolidation of environmental law has benefited greatly from the legal experience of local companies, which have wisely set rules to protect the natural resources of their territories and have rationally regulated human activity.

Sustainable development seems a concept borrowed from the ancient wisdom with which peoples have regulated the use of the needed resources for the survival of the human race.

Population growth, which has been considered unsustainable for decades, must be put in relation to the goods of nature and must be addressed in conjunction with the need to reduce and/or eliminate mass poverty.

Global agriculture has the potential to provide food for all mankind, but this is not available in the poorest areas. While agricultural production in industrialised countries has been rationalised and protected from international competition, in developing countries there are still no systems that can guarantee a constant food supply. It depends on income distribution, since hunger is often more a consequence of poverty than food shortages.

On the other hand, Nature is continually threatened by man, but it seems that there is still time to stop a process of irreversible destruction of tropical forests and other reservoirs of biological diversity, while exploiting them.

The Maastricht Treaty (1992): Affirmation of the European Environmental Policy

The Maastricht Treaty, also known as the Treaty on European Union (TEU), has led to greater cohesion between the peoples of the Member States, thanks to the establishment of European citizenship. Moreover, this treaty modified the First Treaty of Rome, the TCEE (since 1992, simply called ECT).

The TEU has reformed the Union’s activities by dividing them into three main pillars:

1. the first pillar is dedicated to the foundation of a common European market, (also thanks to a future economic and monetary union), while continuing the policy on coal, steel and atomic energy;

2. the second one provides for the construction of a single common security policy towards the outside (CFSP);
3. the third one aims to build a European area of freedom, security and justice in which there is cooperation against crime at supranational level (JHA) and police and judicial cooperation in criminal matters.

The Treaty, thanks also to the strengthening of the powers of Community bodies, has made the environment an official area of EU policy, introducing the codecision procedure between EU Parliament and EU Council and establishing qualified majority voting in the European Council as a general rule.

Environmental policy became a priority and an institutional goal of the Union, which promotes an increasingly harmonious and balanced development of productive activities, with a view to sustainable and non-inflationary growth related to the environment (Article 2 TEU).

With Maastricht, the precautionary principle is introduced, defined in Article 15 of the Rio de Janeiro Declaration of the same year: “*in the event of a risk of serious or irreversible damage, the absence of absolute scientific certainty must not serve as a pretext for postponing the adoption of appropriate and efficient measures, including the costs of preventing environmental degradation*”. This principle reverses the burden of proof by requiring the subject to demonstrate that certain activities do not irreversibly damage the environment. If this is not the case, preventive remedial measures must be put in place. The principle of subsidiarity specified in Article 130 EEC and Article 3b of the Maastricht Treaty distributes powers between Community bodies and Member States, or between the State and the regions, giving greater autonomy to the bodies closest to the citizens and leaving the action of the higher body to be taken only on a subsidiary basis and when necessary. With the Maastricht Treaty, this assumption became a general principle of the Community legal order in certain branches, such as the environment.

The UNCED Rio Conference, UNFCCC and Agenda 21 (1992)

The second UN Conference in 1992 held in Rio de Janeiro, entitled *Environment and Development*, helped to build a series of political actions aimed at putting the principle of sustainable development into practice, as intended by the Brundtland Report.

The central theme of the Conference was climate change: on this occasion, United Nations Framework Convention on Climate Change (UNFCCC) was drafted, signed by 154 nations. The goal, although not binding, became to reduce atmospheric concentrations of greenhouse gases to “*prevent dangerous anthropogenic interference with the Earth’s climate system*”. This obligation was mainly addressed to industrialized countries, which had to reduce greenhouse gas values to 5% less than 1990 values by the year 2000: since the signatory countries have very different rates of industrial development, it was established that responsibilities are common, but differentiated, with greater burdens for the more developed countries (being also the major polluters), as indicated in Annex I of the UNFCCC.

Since 1994, the date of entry into force of the Convention, Parties have met annually at the Conference of the Parties (COP) to monitor progress on the UNFCCC agenda and to establish legally binding actions that are increasingly appropriate to the state of the art.

In Rio de Janeiro, the participating countries drew up a very important document, Agenda 21 which sets out 27 principles divided into 40 chapters, in order to organize a comprehensive planning of governmental actions around the world to achieve the results to which the Parties aspire. The number 21, which is an attribute of the word Agenda, refers to the 21st century, as the priority themes of this programme are the climate, environmental and socio-economic challenges of the third millennium.

The action programme is divided into 4 areas:

1. social and economic sector, dealing with poverty, health, environment, demographic aspects and production;
2. conservation and management of resources (atmosphere, forests, deserts, mountains, water) and chemicals and other waste;
3. strengthening the role of the most significant groups, such as women, young people, the elderly, NGOs, farmers, trade unions, productive sectors and the scientific community;

4. implementation of the programme, including scientific instruments, training, information, international cooperation, partnership, legal and financial instruments. Agenda 21 coined new and very useful guidelines and concepts which, all together, give indications on how to carry out this great work of saving nature on a global level.

Let us see what are these principles, all interrelated, which have inexorably changed the vision of the problem.

Co-responsibility implies that all social partners (citizens, administrations, companies and their shareholders) must actively participate with their contribution.

This implies that Governments are required to raise awareness among the stakeholders mentioned above, encouraging synergistic action between different administrations and users, as well as between companies and consumers. Everyone must understand their strategic role, which no longer has a hierarchy, but becomes an increasingly participatory and democratic process (principle of governance). As stated in chapter 28, local authorities must implement a local agenda in order to achieve the goals: *“Each local authority must open a dialogue with its citizens, local associations and private companies and adopt a Local Agenda 21. Through consultation and consensus building, local authorities can learn from the local community and business and can acquire the information needed to formulate the best strategies. The consultation process can increase the environmental awareness of households. The programmes, policies and laws adopted by the local government could be evaluated and modified on the basis of the new local plans thus adopted. These strategies can also be used to support local, regional and international funding proposals. The motto is: “think globally, act locally”.*

In addition to the construction of a shared vision by the global community, also thanks to the principle of sustainability which is extended to all sector policies, Agenda 21 aims to create partnerships of all kinds, based on a new way of understanding the public-private relationship, for the concrete implementation of concerted actions for sustainable development. Implementation by the Member States remains voluntary.

Following the Rio Conference, there was a shift from major global ecological protests to countless local protests scattered around the world, well expressed by the formula *“Not in my backyard”* (NIMBY), a concept declined according to different cultural perspectives.

In 1997, the UN, in a special session dedicated to assessing progress during the first five years since the drafting of Agenda 21, highlighted the continuing disparity in progress and the resulting disparity in income at an increasingly global level. Ten years later, the implementation plan agreed at the World Summit on Sustainable Development (Earth Summit 2002 or WSSD) confirmed the United Nations’ commitment to the full implementation of Agenda 21 and the achievement of the Millennium Development Goals.

It has to be said that the cause of climate change seems to have been partly identified in the hyperactivity of production: the increase in technology and consumerism are two very important aspects, as far as pollution is concerned. It is true that more and more evolved and environmentally friendly devices have been born (purifiers, filters, electric cars, solar panels), but this is not enough to exorcise the commercial speculation of the great industrial empires. Technological devices are produced in huge quantities, promoted on a large scale through advertising and almost imposed, thanks to the monopoly of distribution channels, causing a blind destruction of natural resources. These procedures remain alive and often get worse because of lobbying pressure and the complacency of many local administrative realities: although legislation is abundant and timely, we are still seeing wild economic speculation due to the lack of law enforcement.

On the other hand, we have also seen the phenomenon of major public investment in environmental protection, although often through inadequate instruments such as incinerators.

The Fifth EAP (1993-2000)

In 1993, the Fifth EAP (1993-2000, *Towards Sustainability*) was adopted, essentially aimed at finding ways of reconciling the needs of economic development with those related to environmental protection. Thus the Fourth Phase was opened, full of new ideas and changes. In the Fifth EAP, a different approach emerged: the approach became horizontal, as all the possible causes of pollution were considered and all

the actors actively intervened. On the one hand, transversal and no longer only sectorial instruments were encouraged in a unified perspective of environmental problems, but seen in their interrelationships; on the other hand, the aim was to develop the participation of businesses, citizens and other stakeholders through the adoption of instruments that could go beyond the traditional scheme and the change in behaviour, not only entrepreneurial, but also social and individual.

It must be said that, in the early 1990s, Mathis Wackernagel and William Rees of the University of British Columbia conducted a study to find an indicator to measure humanity's demand for natural resources, the Ecological Footprint. It measures how much land area and water mankind needs to produce the resources it consumes (also taking into account the technology available) and the rate of regeneration needed to reabsorb the waste produced. According to their studies, humanity currently uses the equivalent of 1.3 planets each year. In other words, the resources used in a year need 1 year and 4 months to regenerate. If this trend continues unchanged, in 2050 we will need the equivalent of two planets to meet our needs.

In 2000, the Nobel Prize winner for Chemistry Paul J. Crutzen and the biologist Eugene F. Stoermer suggested to define the present geological era with the term *anthropocene*, arguing that the anthropic impact on the environment is having visible effects that cause changes in the balance of the environment and climate.

UNCLOS: The Law of the Sea (1994)

The 1982 Montego Bay Convention (which did not enter into force until 1994) replaced the four previous 1958 Geneva Conventions, solving a number of unsolved problems in the field of the Law of the Sea. Until then, the old concept of the freedom of the seas dating back to the 17th century was in force, when national rights were limited to 3 nautical miles from the coast, according to the rule of "gunfire". Beyond 3 miles, these were international waters with free access and transit by all states.

After the Geneva Conventions, many states expressed an interest in extending their jurisdiction beyond 3 miles in order to exploit marine, mineral and fishery resources. This desire was first officially expressed before the UN in 1967.

After a 14-year negotiation process, the United Nations Convention on the Law of the Sea (UNCLOS) took shape, which set out guidelines for the management of the seas and oceans, both for the protection of the marine environment and for the exploitation of marine resources.

The old customs were thus formalized in the Convention and international waters became the property of all States.

Among the most relevant content there is the jurisdiction of the continental shelf and marine mining activities, environmental protection obligations and the implementation of scientific research related to salt water.

At present, 165 states, including the European Union, participate to the Convention; the United States has not yet ratified it, as they fundamentally disagree with Parts XI and XII in relation to duties and responsibilities in the field of maritime pollution. The Convention precisely subdivides the various marine bands, with clear and defined measures starting from the coast, so that the national jurisdiction extends over the 3-mile band, considered inland waters.

On the territorial waters, between 3 and 12 miles, the laws of the coastal state still apply, but there is a right of passage for any foreign vessel, provided it is harmless (not detrimental to the security, good order and peace of the coastal state). Fishing, dumping of waste, armed activities and espionage are instead considered offensive actions; submarines must also sail in emersion, showing the flag.

Archipelagos are part of inland waters. There is also an Exclusive Economic Zone (EEZ) which extends for about 200 nautical miles, where the State can fish, source oil and other minerals on an exclusive basis.

Up to 24 nautical miles from the baseline, the contiguous zone is extended, where the state can punish violations of other states and regulate customs, tax, health and immigration matters. This zone is called the hot pursuit area, because red-handed pursuit is allowed.

Beyond 200 miles, but no more than 350 miles, the continental shelf extends, considered the natural extension of the state territory. This is considered the maximum limit that the coastal country cannot exceed for the exploitation of resources.

The Helsinki Convention (1996)

Following the Barcelona Convention, 26 member countries of the United Nations Economic Commission for Europe (UNECE) decided to adopt a Convention on cooperation in the protection and use of transboundary watercourses and international lakes (Helsinki Convention, or Water Convention), which entered into force in 1996.

The task of the Water Convention was mainly to promote cooperation between countries for the prevention and control of pollution of transboundary watercourses and international lakes and for sustainable use of water resources.

Since March 1st, 2016, all UN countries (and not only those belonging to the UNECE area) can formally accede to the Agreement. Today, 42 Parties participate to the Convention: 40 UNECE countries, the European Union and Chad (the first country outside the UNECE area to ratify the Convention on February 22nd, 2018).

The Fifth Phase, the Treaty of Amsterdam (1999) and the Nice Charter (2000)

The Treaty of Amsterdam of 1999, signed by 15 European countries, opened the Fifth Phase, marked by a strengthening of Community policies on the basis of the three pillars, in view of a future enlargement of the Community, thanks to the amendments made to the Treaties establishing the EEC. Among the commitments made in this Treaty, there are employment growth, health and environmental policies.

Although the Treaty did not make any substantial changes to environmental matters, the principle of integration was raised to the rank of general principle as a guiding criterion of the Community system, becoming increasingly important during the Sixth EAP: the latter defined the guidelines for the next ten years, always with a view to sustainable development in conjunction with the introduction of the principle of enhanced cooperation between the countries of the Community.

The principle of integration implies the development of an all-encompassing strategy aimed more and more concretely at integrating environmental requirements with those of a social and economic nature, specifically on 7 areas: air pollution, waste prevention and recycling, protection and conservation of the marine ecosystem, protection and conservation of the soil, sustainable use of pesticides, sustainable use of natural resources and increase of eco-innovative urban environments.

Another important feature of the Treaty is that it has simplified the previous legislation by repealing rules that have become obsolete.

In 2000, the Nice Charter followed (also called the Charter of Fundamental Rights of the Union, CDFEU), then amended in Strasbourg in 2007. The Charter was initially born with free accession, but with its integration into the Constitutional Treaty of Rome in 2004 and the Lisbon Treaty in 2007, it was recognised as part of the binding law of the European Union. In particular, in Article 37, the Nice Charter assigned autonomy to the environmental instances, worthy of protection: *“a high level of environmental protection and the improvement of its quality must be integrated into the policies of the Union and guaranteed in accordance with the principle of sustainable development”*.

The right to a healthy environment, implicitly seen as an indirect human right to one's own health, must be transposed into national Constitutions as a fundamental value: Italy included the protection of this right in the years immediately following with the Constitutional Reform of 2001, since, in general, environmental interests must be correlated and read together with other individual interests, among which the most important is certainly the right to health.

During 2002, a White Paper on good governance and a Green Paper on Corporate Social Responsibility (CSR) were published, which further strengthened and defined future European policy.

In the White Paper on good governance, we recall the fundamental political principles which the Union would use in the future to improve its functioning:

1. open institutions for citizens through accessible language, in order to gain their trust and make decision-making processes transparent and participatory;
2. clarity on accountability, where each institution and each Member State must clearly express its role, goals and functions;
3. European policies must also be timely, effective and consistent to produce the necessary results.

Enlargement of the Union accentuated the differences and challenges: political decisions had to be shared between central institutions and local authorities in accordance with the principles of proportionality and subsidiarity; the choice of the level at which to intervene and the instruments to be used had to be assessed in relation to the goals pursued, followed by a systematic review of the criteria of necessity and proportionality.

In the 2001 Green Paper on Social Responsibility, we see this approach specified: the linear model, according to which policies are adopted and imposed from above, must be replaced by a virtuous circle, based on feedback, networks and participation at all levels, from the definition of policies to their implementation.

The improvement of the markets can only be achieved through an increasingly broad participation, thanks to the awareness and involvement of all social actors, in particular with the development of CSR in the field of communication, a burden that falls on the major industrial realities.

The Kyoto Protocol (1997-2005)

In 1996, the EU set the goal of limiting the rise in the earth's average temperature to a maximum of 2 °C, considered to be the result of greenhouse gas pollution caused by large industries.

The Kyoto Protocol took up this suggestion, which was considered a global emergency. It was signed by over 180 countries in December 1997 in Tokyo. Together with the Protocol, the United Nations Framework Convention on Climate Change (UNFCCC), which was drawn up in 1992, was adopted.

The Kyoto Protocol did not enter into force until 2005 after its signature by Russia, as it required the ratification of at least 55 nations producing at least 55% of pollutant emissions. The validity of the Protocol refers to the period from 2005 to 2012.

Previously, in 1987, the Montreal Protocol was signed, which called for the reduction of emissions harmful to the ozone layer: it is assumed, according to current scientific knowledge, that human activity is responsible for most of the global warming that has occurred over the last 150 years and is expected to continue throughout the 21st century. The Intergovernmental Panel on Climate Change (IPCC, 2007) has made some projections, assuming that there will be no emission reduction activities until the end of the 21st century. The IPCC estimated a 66% probability of a temperature increase between 1.1 and 6.4 °C over the next eighty years. The variability of projections depends on possible scenarios for different social and economic growth and methods used to limit this temperature increase.

The Kyoto Protocol introduced an obligation to reduce emissions of elements such as carbon dioxide, methane, nitrogen oxides, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride by no less than 8.65% compared to emissions in 1990 as a base year.

Following the Protocol, a programme of flexible mechanisms for the acquisition of emission credits (European Climate Change Programme, ECCP) was devised. The ECCP (European Climate Change Programme) was launched in 2000 by the European Union Commission and ratified in 2002. The task of the ECCP was to develop a European strategy to meet the requirements of the Kyoto Protocol. The EU ETS Gas Emissions Trading Scheme is perhaps the most significant contribution of the ECCP. The system is explicitly mentioned in the 2000 Green Paper on greenhouse gas emissions trading within the European Union.

It contains a European Union Greenhouse Gas Emission Trading Scheme (EU ETS):

1. The Clean Development Mechanism (CDM or Clean Development Mechanism) allows industrialized countries to implement projects in developing countries that produce environmental benefits and economic and social growth in host countries, generating emission credits (CERs) for countries that promote interventions;
2. Joint Implementation (JI) allows industrialised countries and countries with economies in transition to implement projects to reduce greenhouse gas emissions in another country of the same group and to use the resulting credits jointly with the host country;
3. Emissions Trading (ET) allows for the exchange of credits between industrialised countries and countries with economies in transition, so that a country that has achieved a reduction in its

emissions that is greater than its target, can sell these credits to a country that has not been able to meet its commitments.

The Doha Agreement signed in 2012 extended the validity of the first Tokyo Protocol to 2020, with increasingly ambitious targets for cutting greenhouse emissions.

The United States left the Protocol in 2001, although it is responsible for about 36% of total carbon dioxide emissions. The US is proposing, in agreement with other Asian countries, alternative systems to the Protocol, which are still to be examined and verified. Some American cities such as Chicago and Los Angeles are studying the possibility of applying the Act locally, bypassing the US central government.

Other states are not required to reduce gas and carbon dioxide emissions. India and China, despite having ratified the protocol, are exempted, because they are not among the great contemporary realities that have caused the current pollution, even though they will probably be the cause of the future pollution of the planet.

The Lisbon Strategy (2000)

In 2000, the European Council opted for a reform programme aimed primarily at supporting employment, boosting economic reform and increasing social cohesion, aim of making the Union increasingly competitive internationally within ten years. The basic idea was to develop knowledge to reduce ignorance, poverty and social exclusion.

The Spring European Council, a summit between the Heads of State and Government, held every year in March, was institutionalised at that time. It focused on economic and social issues: innovation and entrepreneurship, welfare, social inclusion, job retraining, equal opportunities for women's work, liberalisation of labour and product markets, sustainable development.

The acceleration of economic liberalisation had drawn the attention of the Council to the need for effective management of the corporate governance of certain large companies, their integrity and transparency towards shareholders and other social actors, including trade unions and non-governmental organisations.

In Lisbon, the Council mainly addressed companies, which for the first time were called upon to have a sense of social responsibility: to improve the organisation of work, develop equal opportunities and social inclusion, they were asked to adopt good practices aimed at economic recovery with a view to sustainable development and to cultivate forms of long life learning.

The Green Paper About CSR (2001)

Shortly after the Lisbon Council, the European Social Agenda was drawn up, the main document of which was the Green Paper on CSR. The Green Paper contained guidelines for companies so that they could work together in pursuit of the targets of the Lisbon Strategy. Particularly, the Green Paper included the concept of CSR (Corporate Social Responsibility), defined as *“the voluntary integration of companies' social and environmental concerns into their business operations and relations with stakeholders”*. The Green Papers come from the European Commission to stimulate reflection on a specific topic. They invite individuals and groups to participate in the consultation process. Sometimes, Green Papers give rise to legislative developments which are then presented in White Papers, European Commission documents containing concrete proposals for action in a particular area. The latter serve to consolidate political consensus. The most recent White Papers include the 2017 White Paper on the future of Europe Reflections and scenarios for the EU towards 2025.

CSR was identified as the best way to make the European Community more and more competitive in a sustainable and socially integrated way, thus contributing to the strengthening and modernization of the European social model: CSR practices are not limited to a mere public relations exercise for philanthropic reasons, but on the contrary lead companies to reorganize their activities in order to ensure socially responsible risk management and greater competitiveness, especially through the development of social dialogue.

CSR is not a new phenomenon, taking as its starting point the paternalism of the 19th century: it differs from it in the type of approach, which currently involves increasingly elaborate strategic management.

The good CSR practices set out in the Green Paper were a reflection of the broader global framework started in 1997 by the 2000 UN Global Compact, the ILO Tripartite Declaration and the OECD Guiding Principles for Multinational Enterprises in international social policy.

The management of social and environmental problems in a company is therefore an important component of corporate governance: it is called upon to consider an increasing number of interlocutors, towards whom it must be able to take concrete and transparent action. In addition to the company's shareholders, there are other stakeholders, including employees, suppliers, customers, partners, public institutions and NGOs.

CSR includes a range of voluntary practices that go beyond compliance with legal requirements and can lead to optimal results and benefits for the company in its operating environment.

The OECD reports drawn up since 2000, specify and collect CSR guidelines for the major industrial companies in Europe and the world.

Current surveys have shown that the greatest obstacle to the dissemination of CSR is the lack of awareness of the benefits it brings to companies, and this particularly concerns SMEs (small and medium-sized enterprises).

Like all market information, CSR practices affect the relationship with individual consumers and investors: if they are informed about the company's activities, the company can significantly improve its credibility, bypassing the level playing field imposed by the legislator to safeguard against unfair practices.

CSR contributes to the improvement of social and environmental risk management, directly impacting on the total quality of the company. Transparency about the results of a socially responsible approach is absolutely central to the debate on CSR, as it enables the social partners to assess how well the company actually meets their expectations.

The Green Paper identifies the dual scope of CSR, which is internal or external: internally, companies must demonstrate to consumers that they not only manufacture safe and socially responsible products, but also that these practices are applied in the management of human resources while respecting the health and the safety of workers with greater investment in human capital.

The company's external action, on the other hand, concerns the adoption of environmentally responsible practices towards the community and its trading partners in respect of the environment and the human rights. These practices mainly concern the management of natural resources used in production. In general, a reduction in the consumption of resources or in polluting emissions and waste can lead to a reduction in the impact on the environment. Such strategies can bring benefits to the company, which can thus reduce waste disposal costs and lower the overall costs of the raw materials.

CSR practices, in order to be credible and effective, require common assessment parameters, such as the creation of uniform awards and codes of conduct.

The growing importance of CSR at market and public policies raises an important issue: the legal recognition of CSR benchmarks in the context of the common market. For this reason, the European Commission has set up a multi-stakeholder forum to facilitate the exchange of experience, to promote regular analyses of good practices adopted by different business realities, allowing the benchmarking necessary for the adoption of common assessment criteria. The forum brings together business, trade unions and civil society. In addition, business ethics studies have contributed to the emergence of two distinct visions of CSR:

1. the strategic vision, linked to the economic and reputational benefits dependent on the pursuit of social goals by the company;
2. the ethical vision, which recognizes a sort of corporate duty to act correctly without damaging anything or anyone, even if this is not necessarily beneficial.

Some companies noted that less exploitation of resources can lead to increased profitability and competitiveness. Many multinationals now produce reports on social responsibility, but often they do not deal specifically with human rights or child labour. These reports are as diverse as the approaches of the companies that produce them. With regard to common codes that outline the type of information to be disclosed, the reliability index for evaluation procedures and audits is considered important.

The Danish Government proposed a social index (self-assessment tool) that can determine the extent to which a company assumes its social responsibilities. With this index, expressed in figures ranging from 0 to 100, it is easy to indicate which is the level of social responsibility of the company itself to employees and external stakeholders.

CSR is also becoming an object of interest for public authorities, who tend to include its criteria in market regulation, selection of concessions, subsidies, tax incentives and public procurement. In this respect, one of the favourite instruments is the social budget as a voluntary practice.

In a broader context, CSR can also be extended to other areas of European policies, especially employment, trade and social policies: in 2005, the European Commission committed itself to applying CSR principles in all its policies.

In Italy, the Ministry of Labour promotes CSR practices and monitors their progress.

The Aarhus Convention (2001)

In 1998, the Convention on the Procedural Transparency of Decisions by Public Authorities in Environmental Protection was drawn up in Aarhus. The Convention entered into force in 2001, but was not put into effect until 2005, when the Member States transposed the Directive 2003/4/EC internally.

The UNECE and a huge number of Non-Governmental Organizations participated in the drafting of the Convention.

Its importance lies in having highlighted public participation in the formation of international legal acts in environmental matters: the need for political approval by associations and other collective bodies clearly emerged. In addition, it was thought that, allowing access to environmental acts, could help to make individuals more responsible and aware of the issues involved and to promote ecological education.

The Convention also dealt with the recognition of environmental protection associations, groups and organisations, even if not officially registered. With judgment no. 243 of 08.11.2016, the European Court of Justice affirmed the active legitimacy also for non-recognised associations, provided that their commitment to environmental protection is effective and not occasional.

The Convention is based on 3 main areas: ensuring public access to information on the environment held by public authorities; promoting public participation in environmental decision-making; extending the conditions for access to justice in environmental matters.

Environmental information must be transparent and accessible to the public, with a few minor limitations. There can be a refusal only if: the public authority does not have the information requested; the request is manifestly unreasonable or too general; the request concerns a matter in the course of completion; the request concerns confidential information relating to national defence and public security, or in the case of particular commercial and industrial information relating to intellectual property or personal data. Cases of refusal shall be interpreted restrictively. Public authority means any national or Community public body. Each authority is required to update the information in its possession by registers and databases (in 2006, the European Union adopted the Regulation 1367/2006/EC, which requires Community institutions and bodies to implement the obligations contained in the Aarhus Convention). Today, this is done especially through institutional websites, which became mandatory in 2006. These contain news on environmental legislation, national plans and policies and international conventions, often in a dedicated section. With regard to public participation in decision-making processes, these are mainly decisions relating to authorisations for specific activities included in Annex I of the Convention: the public has the right to participate in the initial training process and can learn about the subject matter, the act to be adopted, the body that must prepare it and the procedures for training and consultation of the acts.

Article 9 of the Convention defines the criteria for lodging an appeal against the measure adopted. Appeals may be administrative (the decisional jurisdiction lies with the individual public authority that adopted the act), or judicial (in these cases, jurisdiction will lie with an independent, impartial and legally established court of law). Each Member State must have a review procedure in its national legislation. Italian law allows appeals before the competent TAR, whose decisions can be appealed against before the Council of State for the second instance. Acceding States are also required to adopt rapid and free or inexpensive procedures in environmental justice matters.

The Convention has also deeply dealt with increased transparency in matters relating to genetically modified food and feed and the deliberate release of genetically modified organisms (GMOs) into the environment and water policy. In 2018, the Commission adopted a Citizens' Guide for access to justice in environmental matters, published in Luxembourg.

The Sixth EAP Environment 2010 (2002-2012)

The 6th EAP introduced a ten-year policy, which in some cases did not prove to be a sufficient time frame. In spite of this, many steps have been taken and the environmental issue has taken on much more defined connotations, especially thanks to Dir. 35/2004 on environmental damage liability and the wide-ranging legislative manoeuvre made in 2006, which confirm the long and solid European path towards an increasingly articulated all-encompassing environmental policy.

The next step was the Seventh EAP (the present one), which introduced the new 2018 regulations and pushes the eye much further, towards a programme that reaches at least 2050.

Let us now look at the highlights of the decade from 2002 to 2012.

Directive 2004/35/EC: Prevention and Remedy of Injury (2004)

In 2000, the European Commission published the White Paper on environmental liability, believing that it could be the subject of subsequent legal legislation with a unified civil-law imprint and a deterrent to pollution. The political strategy set out in the White Paper was based on the founding principle "*the polluter pays*", in order to consolidate effective environmental protection: it was a question of considering the financial coverage of all the costs connected with a harmful event to the environment, including the costs of remediation and reclamation, since if the polluter fails to do so, these costs will inexorably fall on the State and therefore on the taxpayer.

Civil liability for environmental damage as an expression of the "*polluter pays*" principle had its begins in the Fourth EAP 1987 and in the subsequent Fifth EAP of 1993, but always without arriving at the relevant legislation, which was only issued in 2004, when the content of the White Paper on environmental damage was fully reported in Dir. 2004/35/EC.

The Directive circumscribes and defines its scope of application: it does not apply to any possible negative alteration of the environment, but only to what is strictly defined within the same Convention as environmental damage, understood as "*a measurable negative change of a natural resource or a measurable deterioration of a service of a natural resource, which may occur directly or indirectly*", where service means all the "*functions performed by a natural resource for the benefit of other natural resources and/or the public*".

The Directive distinguishes three types of damage, depending on the type of natural resources considered: protected species and natural habitats, water and soil.

Protected natural habitats are the wild birds and animals listed in the 1992 Habitats Directive, in addition to those already protected under national nature conservation legislation.

Negative effects on protected habitats and species must be "*significant*", to be assessed both in relation to the damage to human health and in relation to "*the original condition at the time of the damage, the activity carried out and the natural regenerative capacity of the damaged ecosystem*".

In case of damage on water, it must be a "*negative effect on the ecological, chemical and/or quantitative status and potential of surface water and groundwater*" (as defined and regulated by Directive 2000/60/EC that establishes a framework for EU action in the field of water policy).

Soil damage consists of "soil contamination that creates a significant risk of adverse effects on human health as a result of the direct or indirect introduction of substances, preparations, organisms or micro-organisms into soil, soil or subsoil". In this case, the scope of protection is limited to pollution that creates a risk to human health, excluding natural events such as soil erosion or Hydrogeological instability.

In the context of the Directive, the resource air is only taken into account to the extent that the contamination may cause damage to the other resources listed above.

This legislation applies not only in the case of damage that has occurred, but also in the case of any imminent threat of damage, defined as “*the sufficiently probable risk of environmental damage occurring in the near future*”, in application of the precautionary principle.

The regulations are applied according to three assumptions:

1. the identifiability of the responsible person; the concrete and quantifiable nature of the damage; the ascertainment of the causal link between the damaging event and the activity of the responsible person.

Thus, it is not applicable to cases of pollution of a diffuse nature, such as that caused by car traffic.

The Directive provides for two different liability regimes, strict liability or subjective liability for fault or intent.

The existence of the causal link between action and damage is sufficient and liability is strict if the author carries out a professional activity among those listed in Annex III of the Directive (Annex III of the risky activities indicated by NACE code): this mainly concerns industrial or agricultural activities that need an authorisation and that involve the discharge of heavy metals into water or air, equipped with installations producing dangerous substances (plant protection products and biocides), activities involving waste management and other activities involving their use (transport, release into the environment), as well as trade in genetically modified micro-organisms. It is well established in doctrine and case law that those who carry out intrinsically dangerous activities must assume the risk of damage themselves and must take the necessary precautionary measures.

On the other hand, we speak of intentional or negligent liability if the damage is caused by an author who does not carry out one of the professional activities mentioned above. Where liability exists, the perpetrator must bear all costs of the damage or the threat of damage. The costs include all costs, such as damage assessment, administrative costs, data collection and monitoring. It is not intended to impose a sanction, but only to charge the costs to the liable party on the classic model of liability for tort/delict, which has the duty to compensate the public bodies that, in the event, have advanced the costs. Recovery can also take place through appropriate forms of insurance or bank guarantee. The Directive itself obliges Member States to adopt financial guarantees, including financial mechanisms in the event of insolvency. A financial guarantee instrument is adequate if has the capacity to cover costs and is available to operators.

Cases of exemption are mandatory: if the general operator can prove that the environmental damage or imminent threat was caused by a third party, or if it occurred despite the existence of appropriate safety measures, or if the perpetrator proves that the damage is the result of compliance with an order issued by a public authority. In such cases, the Member States will take the appropriate measures and bear the costs of restoration.

In the case of Italy, the competent authority is the MATTM. The damage assessment is measured according to the state of scientific and technical knowledge at the time of the occurrence of the harmful event or the threat of imminent damage. The operator shall in any event be obliged to inform the competent authority without delay of all relevant aspects to the risk situation or the harmful event.

Other cases in which the competent authority may discretionarily take the necessary preventive measures itself, are the following: if the operator is in default or undetectable, or if the perpetrator is exempted under the Directive itself.

In the event of environmental damage actually occurring, the operator is obliged (in addition to reporting to the authorities) to take “*all practicable steps to control, contain, eliminate or otherwise manage the pollutants in question and/or any other damage factors with immediate effect, in order to limit or prevent further environmental damage and adverse effects on human health or further impairment of services and the necessary urgent remedial measures*”.

Remediation is considered the first indispensable action in case of damage or threat of damage and consists in restoring the environment to the *status quo ante* as soon as possible, through the use of 3 measures:

1. primary remediation is the preferred one and consists of measures that restore the damaged resources and/or services to their original condition;

2. the additional repair shall take place when it has not been possible to fully restore the initial conditions and shall consist of any intervention to compensate for the part of the missing resources and/or services;
3. compensatory redress is any other action taken to compensate for the temporary loss of resources and/or services until full recovery. The compensation consists of further improvements to natural resources at the damaged site or at an alternative site.

In order to identify the right complementary or compensatory measures, the resource-resource or service-service equivalence parameter shall be used, i.e. the actions carried out shall compensate with resources or services of the same type and quality and quantity as the damaged ones. If this is not feasible, different resources or services shall be provided chosen on the basis of alternative assessment techniques. The choice should always be made on the basis of current scientific knowledge and in relation to the effects on public health and safety, as well as the costs and likelihood of success.

In the Directive, the concept of human health remains central: it is always essential and a priority to define the extent of dispersion of contaminants in order to eliminate or reduce them immediately (harmful substances, preparations, organisms or micro-organisms), taking into account all the specific risks involved.

In the case of several perpetrators of the offence, the allocation of costs follows the national rules on the competition for liability. The Directive establishes a limitation period of 5 years within the competent authority is entitled to pursue cost recovery actions. The period begins on the date on which the preventive and remedial measures have been completed, or on the date on which the responsible operator or third party has been identified. It shall not be retroactive.

The active legitimacy remains with the natural or legal persons affected by the damage, or with those who have a sufficient interest in the environmental decision-making process and can therefore assert the violation of a right, including pro-environmental NGOs.

Italy transposed the Directive in 2006, with a gap only filled in 2011: the duty of restoration and its economic quantification are no alternative to the equivalent of the economic damage itself.

In 2016, following an initial review of the results achieved by Directive 35, a clear improvement in the prevention and remedying of environmental damage was noted.

The Green Paper “Towards a Future Maritime Policy for the Union. Oceans and Seas in a European Vision” (2006)

The 2006 Green Paper entitled “Towards a future Maritime Policy for the Union. Oceans and seas in the European vision” focused on the protection of marine resources, believing that a healthy marine environment was the *sine qua non* for exploiting the full potential of the oceans, contributing to the implementation of European competitiveness, its long-term economic growth and employment in the maritime sector. There are many Europeans living near the sea, which is the primary livelihood for fishermen and sailors. Home to unknown dangers, the sea has represented a constant challenge for mankind.

The European peninsula is surrounded by many islands, four seas (Mediterranean, Baltic, North Sea and Black Sea) and two oceans (Atlantic and Arctic). For this reason, our continent has a coastal development of several thousand kilometres.

Its geographical configuration is such that more than two thirds of its borders are made up of coastlines: maritime areas are subject to the jurisdiction of the Member States. Furthermore, through its outermost regions, maritime Europe is present in the Indian Ocean and the Caribbean Sea. The deterioration of the marine environment may affect coastal tourism, Europe’s largest maritime industry.

In addition to the protection of the maritime market in all its components and the development of the very important naval market, the 2006 Green Paper devoted a lot of interest to improving the resilience that coastal peoples have to adopt because of the various risks related to life on the coast: In particular, the increase in storms and floods in recent years, generally attributed to climate change. These unpredictable events have a major impact on coastal infrastructure, maritime transport, aquaculture development and marine engineering projects (devices using wave and tidal energy). At the same time, there has also been an ever-increasing reduction in wetlands and coastlines: the related loss-making costs are increasing at the

same time and must be spread between the private and public sectors. Europe has a wealth of flood risk management know-how to protect human health, the environment, infrastructure and property.

The form of ocean governance suggested in the Green Paper took account of the various sectoral and regional specificities, while respecting the principle of subsidiarity. The Commission urged the social partners to work together to achieve positive results in terms of increasing and improving the quality of jobs in the maritime sector, which are considered to be primary tasks of European sustainable development policy, and encouraged Member States to sign the UNESCO Convention on the Protection of Underwater Cultural Heritage and the European Convention for the Protection of the Archaeological Heritage, as well as to review school curricula and restructure long life learning policies.

Among the dangers of the sea, we must also consider pollution from ships, criminal activities such as trafficking in human beings, terrorism and smuggling. Compliance with maritime safety rules must be carried out through port state control, which is required to manage maritime traffic in a reliable manner: for this reason, the Commission called for the removal of existing legislative disparities between Member States in order to unify and share the considerable costs of water surveillance.

Among the interests of the Green Paper, it is worth noting the drive for research into Blue biotechnology and the use of other fiscal and financial incentives. The role of marine science and technology in the Sixth and Seventh Framework Programmes has been growing, particularly in research, collection, storage and dissemination of marine data.

Directive 2008/99/EC: Protection of the Environment Through Criminal Law (2008)

The idea of the need for environmental protection also through the criminal law instrument had made its way to cases of environmental damage with a transnational character.

Postponing further the treatment of environmental penal aspects was tantamount to allowing areas of impunity for those States that did not provide for such liability.

The studies carried out by the relevant commissions showed an increase in environmental crimes and a certain lack of homogeneity between the sanctioning responses of the different legal systems.

In order to avoid the risks of ineffectiveness of environmental policy, in 1998 the Council of Europe adopted the first ambitious Community act on the protection of the environment through criminal law by the Treaty No. 172, signed between Member States and non-member States in Strasbourg.

The goal of the Treaty was to improve European environmental protection by means of instruments of last resort, i.e. criminal law instruments, to discourage and prevent harmful behaviours to the environment.

These indications were accepted and forged in Directive 2008/99/EC, with the aim of harmonizing national criminal laws in this area and obliging the Contracting States to introduce specific internal sanctions or to amend existing provisions.

It tended to penalise certain actions that cause or risk causing lasting damage to the quality of air, soil, water, or damage to animals or plants, or cause death or serious harm to persons.

The Directive introduced the concept of criminal liability of natural or legal persons, specifying the measures for the confiscation of equipment and profits, defining the powers that must be available to national authorities and promoting international cooperation in environmental criminal matters. The deadlines for transposition by the Member States were set by December 2010, with the introduction of national criminal law ensuring more stringent environmental protection and a higher degree of deterrence.

The Directive contains a minimum standard criminal harmonization for all legal persons, so that certain types of damage are considered crimes and no longer only administrative violations or subject to compensation mechanisms stated by the civil law. Recital 12 specifies the minimum standard clause, under which Member States may not fall, but may raise the minimum standard, possibly by taking more stringent measures than before.

Directive 99 transposes the principles reaffirmed by two rulings of the European Court of Justice, according to which the competence of the European Community to implement the common policies and actions referred to in Articles 2 and 3 of the EC Treaty also includes the power to require Member States to apply appropriate criminal sanctions, while confirming the established principle that “*criminal legislation and rules of criminal procedure do not fall within Community competence*” (Full effectiveness

of Community law. See Judgment of 23.10.2007, Case C-440/05, for the annulment of Framework Decision 2005/667/JHA to strengthen the criminal law framework for the enforcement of the law against ship-source pollution). The Court has affirmed the legitimacy of the application of effective criminal sanctions by the competent national authorities, if they are proportionate and dissuasive and if they constitute an indispensable measure to combat harmful conduct to the environment.

In terms of application, the Directive provides that a series of conducts attributable to legal persons, which is liable to cause damage to human health or which leads to a significant deterioration of the environment, shall be punished.

Article 3 of the Directive contains a list of illegal activities that are to be considered criminal offences, where there is a presumption of intent or gross negligence, and where they cause damage to human health (death or serious injury), or significant damage to the natural components of the environment (significant deterioration in the quality of air, soil, water, fauna or flora). These activities are listed below:

1. the unlawful discharge, emission or introduction of quantities of substances or ionising radiation into the air, soil or water which causes or is likely to cause death or serious injury to persons or substantial damage to the quality of air, soil or water, or to fauna or flora;
2. the collection, transport, recovery or disposal of waste, including the supervision of such operations and the monitoring of disposal sites after their closure, as well as trading or brokering in waste which causes or is likely to cause death or serious injury to any person or substantial damage to the quality of air, soil or water, or to fauna or flora;
3. the shipment of waste, if such activity falls within the scope of art. 2, par. 335 of the Regulation 1013/2006/EC on shipments of waste, and is carried out in a non-negligible quantity in a single shipment or in several shipments that are related to each other;
4. the operation of a plant in which dangerous activities are carried out or in which dangerous substances or preparations are stored or used which cause or are likely to cause death or serious injury to persons or substantial damage to the quality of air, soil or water or to fauna or flora outside the plant;
5. the production, processing, treatment, use, storage, transport, import, export and disposal of nuclear materials or other hazardous radioactive substances which cause or are likely to cause death or serious injury to any person or substantial damage to the quality of air, soil or water, or to fauna or flora;
6. the killing, destruction, possession or taking specimens of protected wild animal or plant species, except where the action involves a negligible quantity of such specimens and has a negligible impact on the conservation status of the species;
7. trade in specimens of protected wild animal or plant species or parts thereof or in products derived therefrom, except where the action concerns a negligible quantity of such specimens and has a negligible impact on the conservation status of the species;
8. the significant deterioration of a habitat within a protected site;
9. the production, import, export, placing on the market or use of ozone-depleting substances.

Likewise, it is envisaged that aiding and abetting and inciting to commit intentional ozone-depleting acts will be classified as offences.

According to Article 2 of Directive 99, an infringement is defined as an infringement of the two EC and Euratom Treaties, as set out in Annexes A and B, and an infringement of administrative regulations or decisions implementing Community legislation adopted by a competent authority of a Member State (the Directive is accompanied by two annexes: Annex A contains 69 Community directives issued for the protection of the environment and adopted under the EC Treaty; Annex B contains 3 directives adopted under Euratom).

It should be borne in mind that in some of the most ecologically sensitive countries, some disciplines are decades prior to Directive 99, unlike the Italian legislation which did not provide for average damage (the Italian legislation provided only for the case of environmental disaster): the thresholds of minimum offense have been translated into different language formulas and quantitative concepts that are not numerical consequently not always unambiguously interpretable.

States must ensure that the offences provided for are punishable by “*effective, proportionate and dissuasive*” criminal penalties (Article 7), without prejudice to the possibility of establishing more stringent criminal provisions.

The Directive introduces the criminal liability of legal persons for the offences referred to in Articles 3 and 4, when committed for the benefit of any person who holds a leading position within the same legal person.

In addition, there is the criminal liability of the entity “*for lack of supervision or control*” on whom, in the aforementioned leading position, has made possible the perpetration of the offences referred to for the benefit of the legal person by a person under its authority. The liability of the entity does not exclude criminal prosecution against natural persons who are perpetrators, inciters or accomplices of the listed offences.

The provision of liability of legal persons in criminal environmental matters represents a profound change in the system.

This is without prejudice to the wide discretion regarding the type of sanctions, pecuniary and/or disqualification (revocation of authorisations, disqualification from carrying out the activity, exclusion from financing, prohibition to negotiate with the Public Administration) applicable to legal persons responsible for environmental crimes.

The Lisbon Treaty (2009)

The Treaty of Lisbon, signed on December 13th, 2007 (TEU and TEC reform act), officially entered into force on December 1st, 2009. Both reformed treaties reaffirmed widely and with renewed conviction the principles of the Community *acquis* outlined at Schengen. The European countries had felt the need to transform the aims of the Community at the roots, initially born for purely economic reasons. The time had come when the member countries felt the need to consider also the social aspects that they had in common. The great post-1989 migrations that the fall of the Berlin Wall had made possible, posed new challenges for the European Community, above all of a social nature, cohesion and a sense of belonging on the part of the peoples involved. From the Lisbon Treaty onwards, Europe also changed its name (from “Community” to “Union”), also appearing formally more attentive to the social demands that had remained on the margins until then. Firstly, the Treaty abolished the old three-pillar division of competences between the Union and the Member States and reinforced the democratic principle. The Union was concerned with protecting the fundamental rights of citizens, not least by giving legal value to the Nice Charter, which took on the same value as the Treaties. With the Treaty of Lisbon, environmental policy was definitively consolidated. The Union decided to devote a whole title to environmental policy, Title XX of the TFEU, which, in Article 191, entrusted Community policy with the task of ensuring “*a high level of protection, taking into account the diversity of situations in the various regions of the Union*”. Legislative competence is shared between the Union and the Member States (Article 4(E) TFEU): the environment remains one of the policies in which the Union shares legislative power with the Member States and exercises its action in accordance with the principles of conferral, subsidiarity and proportionality (the Treaty provisions specifically dedicated to environmental policy are included in Title XX of the TFEU, which consists of Articles 191, 192 and 193, which replace Articles 174, 175 and 176 of the TEC). Pending future harmonisation of national legislation, Member States may make use of a safeguard clause authorising them, for urgent environmental reasons of a non-economic nature, to take provisional and immediate measures, subject to a subsequent Union control procedure (Article 191(2)). This is because of the financial burden for the implementation of environmental policies, which falls primarily on the Member States, subject to certain derogations. From an international point of view (with Article 21(2)(F) TFEU), the Union reaffirms its role by encouraging cooperation policies in all areas of external relations and by adopting all measures designed to solve common environmental problems, such as pollution (Article 191(1) TFEU).

Within their respective competences, the Union and the Member States cooperate with third countries and international organisations without prejudice to the right of Member States to conclude international agreements on their own account (Article 191(4) TFEU).

The Seventh EAP (2013-2020)

In 2013, the Seventh EAP was launched. This Environmental Action Programme is mainly characterised by the agreements made in Paris in 2015 by 195 nations and the implementation of the resolutions and goals set out therein. The Programme concludes with the European Green New Deal and the next commitments set for 2050, which have been more or less positively received by the countries involved.

The Non Financial Reporting Directive (2014)

Directive 2014/95/EU, which regulates mandatory “non-financial” communications by “public interest entities” (in particular, banks, insurance companies, companies with financial instruments listed on the stock exchange and large companies or groups of companies constituting public interest entities) was implemented by Italy only in 2016 with Legislative Decree 254.

Directive 95 lays down new minimum standards in the field of environmental and social reporting:

- personnel management;
- respect for human rights;
- fighting active and passive corruption.

The aim is to strengthen virtuous behaviour and increase transparency in the communication of non-financial information of certain public interest entities in order to gain the trust of shareholders and stakeholders.

The information disclosed may be contained in the management report or in another separate report, such as the Sustainability Report or the Integrated Report.

The non-financial statement shall be independently audited. Designated companies must provide information on their business model of management and organisation, the environmental and social policies used and the main risks associated with the business activity: there is therefore an obligation to draw up, for each financial year, a statement on the company’s performance in relation to the issues listed above.

The legislation introduces certain administrative penalties in the event of failure to file the above mentioned declaration.

The non-financial disclosure uses performance indicators that enable an understanding of the company’s policy and the impacts of its business activities.

Therefore, the companies indicated are required to align their internal and external reporting processes, structuring them similarly to the existing financial reporting system.

The regulation is also an example for companies that are not directly affected by the law, but which will be able to shape their reporting structure in an innovative way.

The REFIT Platform (2015)

In 2015, the European Commission (in the framework of improving communication on environmental issues between the various social partners) set up the REFIT platform on a dedicated official EU website. This platform is the result of a process that started in 2002, with the Better Regulation Programme which introduced the obligation to carry out impact assessments and stakeholder consultations for all new initiatives proposed by the Commission.

As part of the REFIT project, in 2007 the Commission launched an action programme to reduce the administrative burden arising from European regulation, as indicated by a specially trained High Level Technical Group. The consultations also covered the promotion of the use of e-invoicing and the exemption of micro-enterprises from EU accounting rules.

In 2015, the Commission published a study examining how the measures of the Action Programme have been implemented in EU countries and to what extent the expected benefits have been achieved. The result was so positive that the REFIT platform was established (*Studio ABRPlus. Final report of the High Level Group on Cutting Bureaucracy in Europe - Review and Outlook*).

One of the tasks of the platform is to improve the existing legislation and simplify Law making procedures.

The REFIT Evaluation is part of the European Commission's programme to monitor the adequacy and effectiveness of regulation, eliminating unnecessary burdens without compromising political and economic tasks. The Commission presents an annual summary of the results and regularly ensures that EU legislation delivers the expected benefits to citizens, businesses and society, reducing bureaucracy and costs. Given that 99% of the EU is made up of SMEs, the REFIT Programme pays particular attention to small businesses, which may be disproportionately burdened by the burden of implementing EU legislation. Through the platform, national authorities, citizens and other stakeholders can participate in improving EU legislation by making suggestions on how to reduce regulatory and administrative burdens. The potential benefits and savings of each new proposal are assessed through impact assessments.

Each year, the Commission publishes the REFIT Scoreboard online, which monitors simplification initiatives throughout their lifecycle. The Scoreboard provides a comprehensive overview of REFIT results. In the first three years of the Juncker Commission, more than 150 initiatives have been taken up to simplify and reduce the regulatory burden.

The Paris Protocol (2015)

The Paris Protocol of 2015, signed by 195 UN countries and with the participation of the UNFCCC, is a legally binding universal agreement on the global climate concluded at COP21 and aimed at reducing emissions by 2050.

The agreement set out a long-term global plan of action to limit pollution and emissions so as to contain dangerous climate change during the current century.

The maximum limit of the 2°C increase is set at 1.5°C, as this would significantly reduce the risks and impacts of climate change.

The National Climate Action Plans presented at the Paris Conference were not sufficient at the time to achieve the targets set by the Protocol, but they did set out a viable way forward.

The commitment made by the signatory governments, however, took into account the fact that developing countries need more time than developed countries to achieve the agreed goals.

The first goal was to reduce pollutant emissions in accordance with the most advanced scientific solutions available.

To monitor progress in a transparent and responsible manner, the signatory countries agreed to meet every five years, including to set more ambitious targets each time. They have agreed to strengthen the capacity of industries in relation to increasingly sustainable development by equipping them with advanced knowledge of waste recycling and control of the entire supply chain, from sourcing to the final product.

In addition, developed countries are committed to providing ongoing international support to developing countries for a common alignment.

To avert the negative effects of damage associated with rising global temperatures, it was decided to increase early warning systems, to improve emergency preparedness and to develop types of insurance against environmental risks.

The 195 participating countries recognised as fundamental the role of minor public bodies (cities, municipalities, provinces and regions) and began to consider the action of civil society and the private economic sector to be of fundamental importance: the political task is mainly to develop the concept of resilience on a horizontal and vertical cooperation basis, through the continuous exchange of relevant information.

On October 5th, 2016, the European Union formally ratified the Paris Agreement, thus allowing its entry into force.

The Union is famous for having always been at the forefront of international efforts to reach a global climate agreement.

Following the limited participation in the Kyoto Protocol and the lack of an agreement both at COP15 (15th UN Conference on Climate Change) and Copenhagen 2009 (on cutting carbon dioxide), the European Union pushed for the construction of a broad coalition of countries that led to the positive outcome of the Paris Conference.

In March 2015, the European Union was the first economy to adopt measures to reduce emissions by at least 40% by 2030. The EU also supports the improvement of resilience in developing countries, a voluntary commitment to which other countries are invited.

Since 2016, Europe has also benefited from the Copernicus Project, satellite monitoring, which provides real-time data to assess land pollution and the areas in which it is possible to invest.

The COP24 in Katowice (2018)

At COP24 in 2018, 196 governments participated in order to continue the work begun with the Paris Accord, still coming up against various limits, both in terms of implementation time and the task of reducing carbon dioxide emissions and leaving many of the most important issues outstanding.

Opinions on the Conference were divided, especially on the points raised by the major NGOs, which roughly reflected the divisions between the participating governments.

Some countries (United States, Saudi Arabia, Russia and Kuwait) insisted on not taking into account the conclusions of the latest IPCC Report.

The environmental associations, while maintaining a certain degree of confidence in the COP, considered instead that the issues to be dealt with were not only those related to climate problems, but were above all the social ones: in order to make the transition fair and equitable, it is necessary to give more consideration to the most vulnerable populations in the face of climate change. What was mainly contested was that the document did not include the issues of human rights, food security, gender equality. In addition, the limited appropriations promised to the Adaptation Fund were not supported by strict rules that would guarantee the certainty of their disbursement.

During the COP24, a document containing guidelines for the future was drawn up, called Rulebook: the text is purely technical and describes the terms according to which the various countries must account for their greenhouse gas reduction commitments, always taking into account the flexibility granted to developing countries, but still leaving open the issues relating to the global carbon market and the period of implementation of national commitments.

At the conclusion of the agreements, one of the strongest opposition came from the Brazilian President Jair Bolsonaro, who blocked the negotiations on the global CO₂ emissions market, especially by not agreeing to the application of the economic deterrent for polluters, which would force each country to pay a certain amount for each ton of emissions.

Turkey has also made the negotiations complicated, as it has refused to be classified on the list of developed countries of the UNFCCC, which would mean that it has to give up a number of financial aid measures that it currently enjoys. NGOs have strongly criticized Macron's France which, after having had a great momentum with the diplomatic project *One Planet Summit*, has greatly reduced its incisiveness in the United Nations.

The INDCs (Intended Nationally Determined Contributions, i.e. the promises to reduce CO₂ emissions) have not been revised, postponing everything to the next Conference of the Parties. It would appear, however, that the review will be set at 5 years in 5 years, in line with the Paris Agreement. Moreover, from 2031, the terms and conditions of the rules will be identical for all participating countries.

The G20 in Osaka (2019)

The G20 met in Osaka, Japan, in June 2019, with over 20 countries and with the participation of Chile, the Netherlands, Egypt, Senegal, Singapore, Spain, Thailand and Vietnam. Iran was absent in the midst of an institutional crisis with the United States.

The nations have achieved important results, such as international cooperation for the common welfare and the suspension of the trade war between the United States and China: this has enabled negotiations to resume and duties to be frozen between the two powers.

Donald Tusk and Jean-Claude Juncker, jointly representing the European Union, highlighted Europe's goals and joined Japan in the decisive international challenges: countering the threat of climate change, promoting free and fair world trade, reducing inequalities and exploiting digitisation to promote sustainable development.

More generally, the priorities discussed at the G20 also covered infrastructure improvements, plastic waste in the oceans, the digital economy and the challenges of an ageing society.

Moreover, Europe achieved a brilliant result, which had been expected for about twenty years: by entering Mercosur, it has earned the possibility of free trade in goods and services with South America (Argentina, Brazil, Paraguay, Uruguay and Venezuela, joined by Bolivia, Chile, Peru, Colombia and Ecuador). The agreement also contains a chapter on sustainable development for the effective implementation of the Paris agreements: this approach could help to halt the deforestation of the Amazon currently perpetrated by Jair Bolsonaro, also a Mercosur signatory.

The agreement leads to a significant reduction in customs barriers between the two blocks: the Mercosur countries undertake to recognise the protection and entry of 357 European PDO and PGI food products, 52 of which are Italian. Tariffs are removed for European products in the automotive sector, automotive components and machinery, chemicals and pharmaceuticals, clothing, footwear and knitted fabrics.

In addition, the EU's agri-food sector can benefit from the reduction of the old tariffs on certain products (chocolates and confectionery, wines and alcoholic and non-alcoholic beverages) and from zero duty entry quotas for dairy products.

The agreement could displease operators in certain agricultural sectors, due to the large South American production of oranges, wine, meat, rice, sugar, services and raw materials.

There is a risk of strong unfair competition due to the unequal working conditions of Mercosur farmers and food risks linked to the use of pesticides and banned substances in Europe, mainly used in Brazil.

The European Union is the leading trading partner for Mercosur, while for Europe the market in question is the sixth largest in terms of trade flows. Europe exports mainly manufacturing industry products (machinery, transport equipment and chemicals), while it imports agricultural products raw materials worth around €21 billion a year from Mercosur. The entry into Mercosur affects almost 800 million European consumers, generating previously unimaginable trade flows.

The concerns also relate to the likely distorting effect caused by an excessive increase in imports into the Single Market.

The COP25 in Madrid (2019)

The Conference, previously scheduled to take place in the city of Santiago de Chile in December 2019, was moved to Madrid following a riot by the Chilean people in the run-up to the summit.

In 2019, several million citizens took to the streets all over the world to ask governments for strong and immediate responses to the climate emergency and social injustice that they experience on a daily basis, as this crisis risks compromising the future of the youngest people.

Mobilisations and protests have paralysed Chile in particular, where the Conference was scheduled, prompting the Chilean Government to call for it to be moved.

Thanks to the willingness of the Spanish government, the COP25 was finally held in Madrid, proving to be an important test for a first concrete response of the Governments to the popular mobilization and the growing alarm of the scientific world.

The Emissions Gap Report, published by UN-Environment a few days before the start of COP25, highlights the urgent need to reduce emissions faster in the next ten years, in order to contain the overheating of the planet within the critical threshold of 1.5°C.

To achieve this goal, Governments (according to the report) must increase their current 2030 commitments by at least five times. In Europe, for example, emissions have fallen by just 0.25% per year over the last five years. The report considers this an ambitious but possible commitment, especially in the G20 countries, which are responsible for about 80% of the current global emissions.

The most difficult issue is the use of the flexible market mechanisms provided for in the Paris Agreement.

With regard to the revision of the aid system (Warsaw International Mechanism for Loss and Damage, WIM), communities in poor countries affected by climate disasters need a clear commitment and the

availability of money by 2022 to tackle rapid reconstruction and economic recovery, thus also avoiding the worrying increase in climate refugees.

Additional resources need to be made available to activate climate change mitigation and adaptation actions, with priority given to grants over the widespread use of loans.

The WIM mechanism deals precisely with the money transfers that the North of the world will have to guarantee to the poorest countries, which had already been promised in Copenhagen in 2009.

The Madrid conference closed without major agreements, but only a few postponements, due to the great distance between governments, civil society and science.

The rules on the New Quota Trading Mechanism have been postponed until the next session, because Europe (although the bearer of the most advanced document, the Green New Deal) alone is not enough. There must be cooperation between the Chinese and US administrations.

Many governments (including Brazil, Australia, Japan and India) have severely hampered the negotiations, not being ready to propose new NDCs.

China and India are currently responsible for more than a third of the world's CO₂ emissions. The Gender Action Plan (GAP), a voluntary programme dedicated to the promotion of women's rights and their representation and participation in climate policy, was approved at Cop 25 despite the removal of human rights protection from the draft text approved at COP 24 in Katowice.

Associations and Non-Governmental Organizations have called for respect for human rights to be made binding in many aspects covered by the Paris Agreement. It has also been added the possibility to directly access the Green Climate Fund in order to obtain the necessary funds for related initiatives.

THE EUROPEAN ENERGY POLICY (2006-2020)

Introduction; Efficiency of buildings; Oil and gas reserves; EU research projects; The transport sector, biofuels and biomass; Offshore wind and ocean energy; Cogeneration; Energy efficiency of products; The EIONet network (2019); The new European *Green Deal* (2019); The Biodiversity Strategy.

Introduction

The European Union is facing some important challenges in the energy sector, including: the import dependency, the scarcity of endogenous resources, high and volatile energy prices, increasing energy demand, security risks in production and transit countries, the growing threats posed by climate change, slow progress in energy efficiency, the need for greater transparency in communications and further interconnection of energy markets. The Union's energy policy seeks to achieve an integrated energy market for the security of energy supply and the sustainability of the energy sector. The related legislation is currently evolving. Some founding principles are written, first of all, in the art. 194 TFEU which, by defining the goals of the European energy policy, promotes the development of renewable energies in order to better align the legislation on climate change. This article makes energy policy a shared competence in cooperation with the Member States, marking a step towards a common energy policy.

There are also some specific provisions about the security of energy supply (art. 122 TFEU) and energy networks (articles 170/172 TFEU). In the coal and nuclear energy areas, the two ECSC and Euratom Treaties must always be borne in mind. Other important provisions concern the internal energy market (art. 114 TFEU) and external energy policy (Articles 216/218 TFEU). In 2006, the Commission launched its first "*Action Plan for Energy Efficiency*" to mobilise civil society, policy makers and market players to transform the internal energy market in the way it can provide EU citizens with the most energy-efficient infrastructure (including buildings) in the Union territory. This action plan tries to progressively reduce energy demand and consumption, with cuts of at least 20% per year since 2006 till 2020. Against the feared risk that EU would only reach half of the target, the Commission responded with the *Europe 2020 Strategy*, a programme for smart, sustainable and inclusive growth, which elaborates a new comprehensive energy

efficiency plan. Following the poor results achieved during the first decade, it was considered appropriate to make the European legislative framework more stringent and comprehensive.

In 2012, the Commission, with its Communication entitled “*Renewable energy: A leading role in the European energy market*”, identified some areas where efforts need to be stepped up by 2020 to bring the Union closer to its 2030 targets. In the following year, the Commission provided further guidance, including the use of cooperation mechanisms to reduce the costs of renewable energy and the full review of subsidies, encouraging tendering, buy-back premiums and mandatory quotas for buy-back tariffs. The 2014-2020 environmental and energy State aid guidelines further contributed to the design of the new framework for support schemes. In the light of the Treaty of Lisbon and the Paris Agreement, the main goal of EU energy policy was and is to move to a zero-carbon economy. In 2016, the Commission presented a package of 8 proposals called *Clean Energy for All Europeans* that mainly points on governance and interinstitutional negotiations. Regul. 2013/347/EU on guidelines for trans-European energy infrastructure, Regul. 2011/1227/EU on wholesale energy market integrity and transparency, Dir. 2016/864/COM and Regul. 2016/861/COM on electricity and Regul. 2016/862/COM on risk preparedness, are some of the main legislative instruments aimed at contributing to a better functioning of the internal energy market. This legislative package was formally adopted by Dir. 2018/2001/EU.

Underlying the European renewable energy policy is the essential principle of “*energy efficiency first*”, which aims to ensure a secure, sustainable, competitive and affordable energy supply.

The Directive no. 2001/2018 confirmed the targets set for 2020, modulated according to the different starting conditions of the various countries, so that the targets ranged from a minimum of 10% for Malta to a maximum of 49% for Sweden. At the present time, the long-term national strategies are giving concrete form to an environmental policy vision until at least 2050.

The 2001 Directive sets targets to be reached by 2030, from 27% to 35% for the share of renewable energy in the internal market, from 20% to 32.5% for energy efficiency, and reduction in overall energy consumption of at least 40%. Recently (28.11.2019) the Parliament declared the climate an environmental emergency in Europe and worldwide and on 15.01.2020 called for a 55% reduction in greenhouse gas emissions by 2030, with new binding national targets of zero net emissions by 2050 at the latest, and interim targets for 2030 and 2040. The Regul. 2018/1999/EU requires each member country to submit an Integrated National Energy and Climate Plan by December 2019 and every ten years thereafter. The Integrated National Plans, which are assessed by the Commission every two years, must cover the goals set by the Paris Agreement, particularly decarbonisation, completion of the internal supply network, energy efficiency and energy security. Decision 2019/504/EU also tries to introduce some energy efficiency and governance remedies for the disbalancing created by the Brexit.

The Union is working for the post-2020 regulatory regime to provide investors with the necessary clarity on future policy, where renewable energy will remain a key sector in the next long-term strategies, since statistical science has also shown that, in the absence of further action, renewable energy growth is likely to slow down after 2020. The current energy efficiency framework consists of a number of directives, which are either planned or under review.

Efficiency of Buildings

According to the Commission, the construction sector accounts for about 36% of Europe’s CO₂ emissions and about 40% of energy consumption. Currently, around 35% of buildings in the EU are over 50 years old: by improving the energy efficiency of buildings, total energy consumption could be reduced by 5-6% and CO₂ emissions cut by 5%. Directive 2010/31/EU on the energy performance of buildings already contained several provisions that aimed at improving the energy efficiency of new and existing buildings. The provisions, which are still valid, concern:

1. the unambiguous calculation of the integrated energy performance of buildings and building units;
2. minimum energy performance requirements for new buildings;
3. minimum energy performance requirements for existing buildings by renovating installations, replacements or improvements;

4. energy performance certificates for buildings, regular inspection of heating and air-conditioning systems, independence of control systems for energy performance certificates and inspection reports.

The Directive requires Member States to define long-term internal strategies to support the renovation of their national buildings, to limit costs and to reduce CO₂ emissions by 80-95% less than in 1990.

In 2016, the *Intelligent Building Finance for Intelligent Buildings* initiative was presented to incentivise and give a signal of confidence to public and private investors to contribute to the energy efficiency of buildings.

The new 2018 Directive on the Energy Performance of Buildings (Dir. 2018/844/EU) introduced some long-term strategies for the renovation of the building stock in each Member State, aiming mainly at improving the energy performance of new and old buildings and setting indicative time milestones for 2030, 2040 and 2050: Member States must renovate their building stock (residential and non-residential, public and private) in order to decarbonise them and make them highly efficient by 2050, with almost zero energy consumption target.

Oil and Gas Reserves

With regard to security of oil and gas supply, Directive 2009/119/EC obliged Member States to maintain a minimum level of oil stocks, corresponding to 90 days of average daily net imports or 61 days of average daily internal consumption (depending on the type of reserve that is higher in quantity). Subsequently, the Regul. 2010/994/EU was adopted to ensure security of gas supply.

Commission Communication 2011/539/COM was adopted with the aim of promoting greater cross-border cooperation with neighbouring countries and creating a wider regulatory area through a constant exchange of information on intergovernmental agreements. On this basis, the decision establishing an information exchange mechanism on this subject was adopted in 2012 (T7-0343/2012).

The Union shall take some measures to ensure adequate risk assessments of supply shortages and develop preventive and emergency action plans.

The Regul. 2010/994/EU concerning measures to ensure security of gas supply has been adopted to strengthen preventive and anti-crisis mechanisms. With regards to gas and pipelines, the Commission proposed to extend the scope of Directive 2009/73/EC (Gas Directive) to gas pipelines to and from third countries (including future pipelines) and in 2019 Directive 2019/692/EU, which fully transposed the Commission's guidance, was issued. In response to the crisis in Ukraine, the Regul. 2017/1938/EU also provided for enhanced regional cooperation in case of emergency, including preventive action plans and a solidarity mechanism to ensure the constant supply of gas.

The European Parliament considers it essential to develop gas and energy network interconnections across Central and South-East Europe along the North-South axis, creating new links, diversifying liquefied natural gas terminals and developing pipelines, thereby opening up the internal market.

EU Research Projects

With regard to research projects on renewable energy and energy efficiency, the Horizon 2020 programme (2014-2020) should be mentioned, which has so far been the main European instrument for promoting research and technological innovation in the energy sector through the allocation of substantial economic resources.

It is also worth mentioning the SET Plan (Integrated Strategic Energy Technology Plan) aimed at accelerating the transformation of the European energy system. It contains 10 actions considered essential for accelerating the transformation of the energy system and generating growth and new jobs. The Parliament welcomed the SET-Plan to make a major contribution to sustainability and security of supply and it would be indispensable for the achievement of the energy and climate goals set for 2030.

The Transport Sector, Biofuels and Biomass

The Commission looked at the transport system and the use of renewable energy to decarbonise and diversify the sector. In road and rail transport, it is planned to phase out the use of certain biofuels produced from food crops that increase CO₂ emissions through a certification scheme.

The Union's goal was to derive 10% of transport fuels from renewable energies (Dir. 2009/28/EC) and to oblige suppliers to reduce the greenhouse gas intensity of their fuels by 6% by 2020 (Dir. 2009/30/EC).

The Commission proposal for the revision of Dir. 2016/767/EU includes updated sustainability criteria for biofuels used in transport and bioliquids, as well as solid and gaseous fuels from biomass used for heat and electricity. Parliament has established quantitative and qualitative sustainability criteria for biofuels (on the basis of social sustainability, land-use rights, impact on security and food prices) and has drawn attention to the problems of indirect land-use change and strengthened consumer rights in relation to the self-consumption of renewable energy in the heating and cooling sector. The Parliament and the Council formally adopted the text in December 2018 (Dir. EU/2018/2001). Member States will have to transpose the revised Directive into national law by June 30th, 2021, which should enter into force from July 10th, 2021.

Wind and Ocean Energy

Renewable energy sources (wind, solar, hydropower, ocean, geothermal, biomass and biofuels) are valuable alternative and diversified sources of energy to replace fossil fuels and help reduce greenhouse gas emissions. As part of the second energy policy reviewed in 2008, the Commission published a Communication entitled *Offshore wind energy: steps towards*, containing an action plan to promote the development of off shore wind and ocean energy in the Union, including energy generated by wave, tidal, thalasso, thermal and saline gradient (Communication *Blue Energy: Realising the ocean energy potential of Europe's seas and oceans by 2020 and beyond*).

Cogeneration

Directive 2012/27/EU repeals the previous energy efficiency directives and obliges Member States to assess the potential for high-efficiency cogeneration of district heating and cooling systems in their territory and then report them to the Commission. Other obligations on States concern cost-benefit analysis based on climatic conditions, economic feasibility and technical sustainability. As part of the Energy Package, the Commission launched on February 16th, 2016 a strategy on heating and cooling (2016/51/COM) which includes plans to promote the energy efficiency of buildings, improve connections between electricity networks and district heating systems, increase the use of renewable energy sources and reuse of waste heat and cold generated by industry. The legislative provisions of this strategy are included in the *Clean Energy for All Europeans* package.

The Energy Efficiency of Products

In relation to the energy efficiency of products, some measures have been introduced, in particular the labelling of uniform information on the consumption of energy and other resources having a direct or indirect impact (Regul. 2017/1369/EU).

Other specific regulatory documents define the requirements for household appliances, which are covered by separate regulations (eco-design of energy-related products and labelling for office and tyre equipment, heating and air-conditioning appliances, vacuum cleaners, computers, dishwashers, lighting products, refrigerators and freezers, televisions and electric motors).

As part of the Strategy for an Energy Union (2015/80/COM), the Commission proposed to revise the existing directives on energy efficiency for products.

Regul. 2017/1369/EU established the new energy labelling criteria to replace the current A+, A+++ and A+++ classes by the A-G scale.

The current Directive has been poorly implemented and Parliament has called on Member States to implement it promptly and fully and, on a proposal from its Internal Committee on Industry, Research and Energy (ITRE), approves a number of non-legislative recommendations.

The European Parliament also supports education programmes for European citizens, so that they can understand how to save more energy.

Besides, the Parliament increased funding for low-emission energy products and highlights the fact that the new energy policy must support the goal of reducing greenhouse gas emissions by 55% by 2030 to achieve zero net emissions and climate neutrality by 2050.

The European strategic policy also highlights the further ambitious goal of creating new skilled jobs and generating savings.

The EIONet (2019)

In May 2019, the European Environment Information and Observation Network (EIONet) was born, the result of a partnership between the European Environment Agency (EEA) and its member countries. Through the EIONet, the EEA brings together the environmental information of individual countries which are committed to the timely communication of nationally validated and high-quality data. The aim is to provide policy makers and the public with targeted, relevant and reliable information. ISPRA, which represents Italy in Europe, is actively involved in the EIONet network.

The New European Green Deal (2019)

In January 2020, the European Parliament approved the Council's new Climate Strategy, the Green Deal, pact for Europe presented by the Commission in December 2019 that includes some recommendations for the long term, with the goal of achieving a climate neutral Europe by 2050 with zero emissions, on the basis of some reports received from high-level scientific institutions. Particularly based on the special report of the IPCC on the impacts of global warming of 1.5°C in 2019 compared to pre-industrial levels, the IPCC special report on climate change, desertification, soil degradation, sustainable land management, food security and greenhouse gas flows in terrestrial ecosystems and the IPCC special report on oceans and cryosphere in the climate change era.

The Union must make a formal commitment to increase the current European target for 2030, aiming for zero net emissions by 2040, thus seeking to bring forward the target set for 2050.

Europe therefore needs to start reviewing the current target of 40% by 2030 in the coming months. The Commission currently estimates that a reduction of at least 45% of greenhouse gas emissions can be achieved. But this target is not sufficient, as it would be better to go well beyond 55%, as proposed by several European governments and the President of the new Commission Ursula van der Leyen: Europe can and must reduce its emissions by at least 65% by 2030, compared to 1990 levels, to achieve zero net emissions in a cost-effective manner by 2040.

The Climate Strategy must create the necessary political conditions to accelerate the decarbonisation of the European economy. The European Green Deal should be supported by a new Right Transition Fund, a Carbon Tax at the borders and the forthcoming creation of a European Climate Bank.

It is essentially a new social contract with European citizens to have a Europe with a circular and fossil-free economy, with the further aim of inspiring the action of other world governments, showing that the transition to climate neutrality is not only imperative, but also feasible.

The Strategy has been forwarded to the UNFCCC, as required by the Paris Agreement. The Council also invited individual member states to prepare national strategies to be submitted to the UNFCCC, in accordance with the agreement.

In Italy, the Minister of the Environment Sergio Costa also expressed his opinion on the new Strategy, hoping for financial support for the decarbonisation of the former Ilva, which could aim at new technologies, such as hydrogen and the reclamation of red sludge from Sulcis.

The Biodiversity Strategy

The New Green Deal also contains the Biodiversity Strategy with targets to 2030, always decoupling economic growth from resource use and intervening in all policy areas with a fair and inclusive transition. The intention is to turn political commitment into a legal obligation and an incentive for investment, especially by innovating industry, transports and the construction sector and encouraging international

partnerships. The Union intends to financially support and assist the people, businesses and regions most affected by the transition to the green economy. Biodiversity and ecosystems are the primary source of all human activities, they filter air and water, contribute to climate balance, transform waste into new resources, pollinate and fertilize crops. Nature provides businesses with half of the world's GDP, but over the last 40 years the planet's wildlife has shrunk by 60%. It is necessary to restore ancient forests, soils and wetlands and create green spaces inside the cities, create protected areas for at least 30% of the land surface and seas in Europe. The use of pesticides must be reduced by 50% by 2030 and it is essential to restore at least 25,000 kilometres of free-flowing rivers, plant 3 billion trees by 2030, with the release of around €20 billion a year between European funds and national and private funding.

The COP26 set in october-november 2021 dealt mainly with the construction, agriculture, food and agriculture sectors and the conservation of marine stocks; it also dealt with coastal wetlands, especially with regards to the reduction of losses due to flood damage. The parties signed the Glasgow Climate Pact and the Declaration on Forests and Land Use and many other pledges on the path set in the previous years. Surprisingly, Usa and China signed a pact of collaboration to reduce global emissions. Besides, extending the Natura 2000 protection network to the chemicals, aviation, tourism and mining sectors can achieve better economic benefits and a better quality of life, while failure could permanently compromise world food security, given that over 75% of the world's food crops depend on animal pollination. Currently, the Natura 2000 network supports about 104,000 direct jobs in protected area management and conservation activities and another 70,000 jobs in related industries. It is expected that biodiversity could generate up to 500,000 new jobs in the future.

ENVIRONMENTAL POLICY IN THE WORLD

The United States; South America; China; Japan and the Satoyama initiative: how to build resilience; Russia; India; Africa and South Africa; Australia.

The United States

American environmental policy depends directly on the choices of the incumbent president. Therefore (in addition to a series of laws already settled over time, some historical judgments on environmental issues and US participation in some important international conventions), it is the President of the United States who, for the time of his term of office, directly decides the environmental policies, thus being able to take positions even diametrically opposed to those of his predecessors.

In the last case until november 2020, the administration of US President Donald Trump presented himself as an environmental denier, compared to the Obama era. Trump has waged a veritable war on the environment and policies to protect the planet.

Here are some of the main involutory moves of the U.S. government in the field of environmental protection during the last years.

At the beginning of 2018, the EPA (Environmental Protection Agency) left OIAI (*Once In, Always In*), apolitical strategy that limited the industrial production of air pollution.

In May of the same year, the American President cancelled NASA's programme for monitoring greenhouse gas emissions (CMS, Carbon Monitoring System, preventing the financing of \$10 million per year: this project made it possible to verify the effective reduction of global greenhouse gases, as provided for in the Paris Agreement).

During the summer of 2018, the Trump administration proposed a revision of the 1973 Endangered Species Act to eliminate protection for endangered plant and animal species. In addition, it ordered the revision of fuel consumption standards. President Trump also repealed the laws limiting the release of methane gas during mining and gave the start to offshore Arctic drilling for crude oil and gas. The five-year concessions (2019 to 2024) covered the Pacific and Atlantic oceans and the Arctic Ocean.

Donald Trump's intention was to halt the decline of coal by investing in coal-fired power plants. Here again we see a dismantling of the environmental policies implemented by Obama during his two presidential terms of office. The only policy in favour of the environment was commitment made by Trump against the waste that is invading the oceans. In October 2019, the President signed a law to improve collective efforts to clean up the oceans from plastic waste. The present President Biden is continuing Obama's work on environmental matters and signed a pact of collaboration with China to reduce gas emissions.

South America

In South America, the effects of climate change are also a major social problem. Global warming has physical effects on the tropical river forest, on the peaks of the Andes with the melting of the glaciers. It first leads to floods, often accompanied by landslides, death and devastation, and then drought and water scarcity. The environmental, social and political conflict relating to the Amazon forest (as well as the Orinoco basin and the rivers that flow through the immense South American prairies) is currently at its peak, showing the whole world the nerve as regards the contrast between economic and social interests.

It is not possible to draw a single trend line for the resources of the entire Latin American continent: the great variety of climate zones and totally opposite governmental orientations do not allow generalizations. Each country has its own history.

In Bolivia, the contraction of glaciers has threatened the water supply for more than twenty years. Already in 1999, a series of protests, which are known as the Cochabamba Water War, led dictator Hugo Banzer to revoke the planned privatization of the city's waters. In 2016, the country suffered its worst drought in 25 years, having to declare the state of emergency. In 2017, the city of La Paz suffered another massive drought. Almost 20 years later, Bolivia continues to face water supply problems.

Under the socialist presidency of Evo Morales (2006 to 2019), the process of privatization and wild exploitation of the environment have fortunately seen a reversal of the trend. In 2006, Morales began a process of nationalisation of oil and mineral resources, 80% going to the Bolivian State, financing the agrarian reform of land redistribution to farmers. But those lands were located in the Amazon and Chaco tropical lands, which have always been inhabited by more than 30 different indigenous groups, while the land concessionaires are mainly from the plateau zone (Quechua and Aymara, like Morales). This reform, although born with the best intentions, could contribute to the growing destruction of forest ecosystems and prairies, because, although the aim is to lift thousands of families out of poverty, natural resources are still seen as a commodity to be exploited and not a heritage to be preserved.

There is a profound ethnic and cultural difference between the Quechua and Aymara farmers' vision of Nature and that of the forest dwellers, who live mainly from hunting and harvesting. For the natives, the ecosystem must remain as it is in order to survive. Native peoples are still at the forefront of the struggle to defend the environment, even before it entered the programs of political movements and collective consciousness.

In Colombia, in the extraordinary scenery of the Sierra Nevada of Santa Marta (a spectacular mountain system that sinks its feet into the Caribbean Sea), the 5,700 meters of the Pico Bolivar stand out. This area is populated by the Kogis, the Aruhacos, the Wiwas and the Kankuamos, who have partially managed to defend this corner of the planet with years of peaceful resistance. It is a sacred place, the point where earth and sky meet, and of which the native peoples consider themselves guardians, and not owners.

The Sierra, due to its beauty, has attracted squatters and drug traffickers, but also the attention of anthropologists and biologists, becoming a protected patrimony for the Colombians. Finally, the Sierra Nevada was declared Natural National Park of Colombia in 1964 and Biosphere Reserve by UNESCO in 1979. Tayrona and Sierra Nevada de Santa Marta National Park and its archaeological sites were also included in the provisional list of World Heritage properties in Colombia in 2012. This conquest is still fragile, being the area constantly threatened by groups of peasants fleeing violence in the countryside, or misery and degradation of the urban suburbs, settling illegally on the slopes of the great mountain system. It is difficult to make these families in need accept the idea that these lands must be left intact.

Bolsonaro, the ultra-right president of Brazil, also played on these kinds of fragilities: leveraging the state of need caused by the economic crisis, he clearly defined the Amazon as a resource; he adopted some measures that remove all obstacles to its exploitation, and declared that he wanted to “integrate” these groups into society, i.e. deport them. This entails the legalization of activities (such as deforestation, gold extraction from rivers by polluting chemical means) that until now were carried out illegally, often denounced by indigenous leaders. The conflict also persists in Chile and Argentina, where the Benetton Empire clashes with the native Mapuche communities. The contrast between poor and native farmers also stems from the populism, which exploits despair.

The Agenda 2030 for Sustainable Development places particular emphasis on promoting peaceful, justice and inclusive societies, underlining the interdependence between sustainable development and peace: *“There can be no sustainable development without peace and no peace without sustainable development”*. The achievement of Sustainable Development Goal no. 16 (SDG 16) implies fair access to justice, respect for human rights, efficiency of the rule of law and good governance, where institutions must demonstrate their capacity to stem conflict and war, corruption and criminal behaviour. Political and criminal violence increasingly occurs in contexts not purely of declared war, but rather in hybrid contexts, where aspects such as socio-economic and environmental degradation overlap.

In the Mexican context, characterised mainly by power asymmetries, SDG 16 is hampered by tensions between drug trafficking organisations and government authorities. A historical-critical approach reveals the complexity of this context and highlights the interests that have fostered its origin and development.

Mexico is not the only country in the world to present a systemic crisis of governance and human rights: these are areas where economic livelihoods depend on the extraction and export of natural resources, where predatory economies find fertile ground in fragile and corrupt governments. The empty spaces left by national governance have allowed the entry of private, regular and irregular actors. As private individuals are not legally bound by international human rights standards, there has been a drastic reduction in security for local populations. In these contexts, a culture of terror is developing by suppressing popular demonstrations. This influences the perception of civil society, instilling fear and undermining its organizational capacities. The reluctance to solve the Mexican political and socio-economic crisis depends on a centralization of information in a few poles of power. The Mexican Government has used drug traffic and criminal organizations as a pretext to justify the almost total militarization of the country, contributing to a dramatic increase in insecurity for the civilians. The international interest in the Mexican situation has led some organizations to create some conflict transformation practices to treat conflicts as dynamic and multiform phenomena. These practices propose a systemic transformation of a society from within, through the removal of the structural sources of injustice, inequality and oppression, in order to rebalance the asymmetries of power. Among these practices, one can note the international protective accompaniment promoted by organizations such as Peace Brigades International (PBI), whose aim is to break the spiral of violence through a non-violent approach of deterrence. Without any pretension to resolve the conflict, and indeed recognizing it as a constitutive and inevitable part of social relations, PBI proposes a dynamic approach based on the acquisition of empathy and creativity in dealing with conflict. Human rights play a primary role in determining the degree of justice in a community. International organizations aim to bring international standards back to the level of local violations. Human rights defenders are increasingly threatened by repression and silence by authoritarian governments, bordering on terrorism. Protective accompaniment and organisations such as PBI aim to re-establish the accountability and transparency of those institutions responsible for monitoring respect for human rights, making the international community a witness to violations. Among the practices adopted by PBI to maintain international interest vivid, we can see the advocacy just described and the frequent publication of reports.

The protection of human rights is a burden of the state, but if it does not pursue them, deliberately breaking international consent, the violation is more likely to be sanctioned. Given the Mexican reality, the value of the non-violent methods used by the PBI is the ability to break down the dominant imaginary into its constituent dynamics and recompose the division of power between the parties in a more equitable way. The concrete results are evident when the “accompanied” communities become promoters of similar initiatives, thus triggering a virtuous circle of capacity-building from below.

One of the main activities of the PBI method is to map actors and interests. The data collected are then transmitted to the various organizations through protection and security seminars, in order to enrich the common repertoire of theoretical and practical tools to become co-authors of peaceful realities. The PBI aims to create spaces for local peace initiatives that will last over time, through initial international support, and then allow activists to carry out their political activities in an increasingly secure reality, without the need for accompaniment. The fact that more and more organizations, in Mexico and elsewhere, are taking the initiative to ask for help and accompaniment from organizations such as PBI, shows the will to break the patterns of repression and silence, to regain the strength to testify and denounce. Justice and peace are not static realities, but states of dynamic equilibrium in which various elements interact in a non-linear way.

Agenda 2030, which is still based on a neo-liberal model of political and economic management with a preference for technical and quantitative approaches, is lacking in defining its goals and the instruments needed. For some areas such as Colombia, Bolivia and Ecuador there are some common aspects: first of all, the difficulty of sanctioning environmental crimes, as the complaints should come from the people, but, given the situation linked to the problem of drug trafficking that affects the area, this hardly ever happens, especially because of the fear of retaliation; secondly, there is the problem of special waste of hospital origin; the only positive note, South America is showing an enormous interest in sustainable architecture, especially with regard to urban areas.

China

Environmental protection has become a central element of 21st century China, as the country could no longer grow without considering the problem of pollution. In 2013, air pollution in Beijing and other Chinese cities reached unsustainable levels.

China has tackled the problem of pollution in a radical way since Xi Jinping became its President. The environmental issue has climbed the Chinese government's agenda and public opinion (made up of increasingly wealthy individuals) does not share the episodes of poor environmental protection. To avoid popular resentment, the authorities have cut back the most polluting factories, the use of coal to heat private homes and toxic cars.

On 15 March 2019, more than 100 million young people in 183 countries demonstrated to urge governments to take immediate action on pollution and climate change.

In Hong Kong, a thousand students raised the same and other protests, clashing harshly with Representatives of the Beijing government. However, other hotbeds of protest were ignited in the People's Republic for very different reasons: in Wuhan, a populous city of ten million inhabitants and the capital of Hubei, protests broke out against the regional government's decision to build a new incinerator, a project imagined by the Chinese authorities when the dizzying growth of Wuhan, the centre of a province whose GDP is growing at 8.5% per year, had not yet occurred. The protests in Wuhan are affecting Chinese power, especially relating to the socio-economic expectations of a large and expanding community.

With the rise of Xi Jinping, the Communist Party has declared a real war on pollution, making China a leader in the fight against climate change in terms of capacity and investment planning within a few years.

Currently, China's environmental policy is characterized by new standards and parameters, higher fines for polluters, tough inspection campaigns, massive investment in renewable energy and diversification of energy mixes.

To reduce high pollution rates and limit the use of coal, China is using oil, natural gas, nuclear, wind and solar energy. Coal still provides for 60% of China's energy needs. This also includes the use of waste-to-energy incinerators, i.e. incinerators that generate energy with steam from the combustion of waste. Their impact on health is highly debated, due to the emission of carbon dioxide. The introduction of incinerators clashes with the issues of the local community, which fears the return of the smog clouds that have poisoned the skies of China for years.

The Hubei is now beginning to get used to the massive urbanization imposed by the government and linked to the gigantic infrastructure project of the Three Gorges Dam on the Blue River. Completed between 2006 and 2009, the dam (which is the most powerful energy plant in the world) has upset the population and the environment of the Hubei in the name of the revolution of the energy supply process.

Unfortunately, the extinction of the lipote, the dolphin that inhabited the waters of the Blue River, is due to the construction of the dam.

Xi Jinping dreams of creating a perfect and enviable country, where economic growth and the well-being of citizens must be based on a strong ecological culture.

Investment in renewables has made China the world's largest supplier of photovoltaic panels and wind energy.

The Environmental Protection Act passed in 2015 provides for strong penalties for public officials and those responsible for environmental offences.

Xi has tightened environmental legislation, even at the expense of economic growth, by introducing stricter laws (introduction of environmental taxes and dismantling some old plants).

The fight against corruption and the improvement of governance were carried out by restructuring the ministries, which output is the creation of the Super Ministry of Ecology and the Environment (MEE), a new entity that merged responsibilities that were previously scattered between different bodies.

On the other hand, the current lower intensity of economic growth generates a series of frictions: in a period of trade war with the United States, the Chinese Parliament, in recent sessions, stressed how much environmentalism is a limit for government representatives in the various provinces, which have great difficulty in complying with the stringent environmental regulations promoted by Xi Jinping.

In 2012, Xi Jinping came to power inheriting a country with a dramatic environmental situation, with pollution levels well above the threshold allowed for the survival of the human species. Within a few years, Xi Jinping's policy led to important goals, such as the reduction of carbon emissions three years earlier than the Agreements, despite the fact that the country was considered the most polluting country in the world until a few years earlier.

Xi Jinping's thought can be summed up by quoting a phrase he said in 2005, when he was still a party secretary: "To have mountains of gold and silver you need clear water and green mountains. Green hills and clear waters are mountains of gold and silver". The environment is therefore wealth in itself to be preserved. Xi pursues an innovative, harmonized, ecological, open and shared development within that ecological civilization characterized by the concept of frugality and pursued normally by Chinese people.

If even China has succeeded in putting the fight against pollution at the top of the political agenda, it means that this can also be hoped for the West.

Japan and the Satoyama Environmental Initiative: How to Build Resilience

The Japanese ethic of nature conservation has its roots in the 6th century BC., when Buddhism was introduced into the country. At that time, there were already protected areas, special hunting grounds and sacred sites. It is a country with solid cultural foundations and social sensitivity that served its people in the most critical moments of its history.

Modern environmental policy has grown after the major environmental disasters of the 1950s and 1960s: cadmium poisoning from industrial waste in Toyama, methylmercury poisoning in Minamata, air pollution from sulphur dioxide and nitrogen dioxide emissions. In urban areas, photochemical smog from automobile and industrial exhaust fumes has contributed to increase respiratory problems in people (asthma and bronchitis), especially in the areas of Tokyo, Nagoya and Osaka.

The policy of the post-war period favoured economic growth and development in Japan. But conditions of environmental pollution, harmful to human health, soon required the adoption of strict rules.

In the following years, some pro-environmental laws were issued, such as the Law for the Protection of Water Quality and the Law for the Control of Industrial Wastewater, both written in 1958, later included in the Law for the Control of Water Pollution of 1970.

Between 1962 and 1968, some regulations were adopted, such as the Air Pollution Control Law of 1968 and the limitation of soot and urban fumes.

In 1969, the Consumers' Union of Japan was born, fighting for the protection of human health against the false declarations of polluting companies and undertaking anti-nuclear awareness campaigns.

In 1972, compensation for culpable environmental liability was introduced in numerous laws, which considered some companies responsible for health problems caused by pollution, including accidental cases.

The Nature Conservation Act of 1972 requires all natural systems to be inventoried every five years, as the frequency of visits by citizens and tourists to national parks is among the highest in the world. Although its forests cover 65% of the country (mostly commercial plantations), Japan imports huge quantities of timber from Borneo. There are currently 28 major national parks and more than 350 smaller parks, as well as a wide range of wildlife reserves, sanctuaries and marine parks. In addition, Japan has eleven World Heritage Sites, including the Buddhist monuments of Horyu-ji and the Hiroshima Peace Monuments. In 1980, the government declared 4 Biosphere Reserves, according to UNESCO principles.

Sulphur dioxide emissions have been significantly reduced thanks to recent environmental regulations, but nitrogen oxides, which contribute to acid rain, are still a problem. Water quality has improved steadily since the 1970s, although many water reserves still exceed organic matter limits.

Japan, despite a rapidly expanding industry and a large population with one of the highest living standards in the world, has few natural energy resources. The country draws most of its energy from its many nuclear power plants, but their location poses significant environmental safety risks, especially in the event of earthquakes, to which the country is particularly vulnerable.

This country suffers from the typical problems of industrialized countries, producing enormous quantities of gases, concentrated especially in urban areas, where 66% of the population lives, particularly between Tokyo and Osaka.

Another problem in Japan is the pollution of industries using high technology integrated circuits. These industries release into water carcinogenic substances such as trichloroethylene and tetrachloroethylene, which are used for cleaning integrated circuits.

In the 1970s, Japan started treating waste electrical and electronic equipment differently from other materials by hiring workers specially trained to recycle such waste, but the costs were too high and, as a result, electronic waste was treated like any other waste and put in common landfills. In order to reduce the release of these toxic substances into ground and water we find some provisions in the 1989, like the Water Pollution Control Law (revised in 1996), which gives administrators the authority to force polluters to clean up.

The increase in household waste in the 1980s was among the highest in the world and Japan is facing a serious shortage of landfill sites.

In 1984, the Japanese Environment Agency published its first White Paper, containing interviews made to citizens, who expressed the concern about endangered species, shrinking rainforests, expanding deserts, ozone layer destruction, acid rain, and the spread of water and air pollution in developing countries. Most of them thought that Japan and other industrialized countries should solve the world's environmental problems.

Environmental protection legislation was strengthened and, in 1993, the Government issued the Basic Law for the Environment, which limited industrial Emissions and the production of industrial products and related waste. Therefore, efforts were made to encourage energy saving and recycling processes and the limitation of land use by industries. A number of victim-rescue programmes were also set up. Since the early 1990s, the country owns also huge stocks of plutonium. Japan has also ratified the Ramsar Convention on Wetlands, the Tropical Timber Treaties of 1983 and 1994 and the Antarctic Treaty, as well as international agreements on biodiversity, endangered species, dumping of waste at sea, abolition of nuclear testing and protection of the ozone layer.

Japan occupies a limited territory and therefore its government has used incinerators, because it is almost impossible to store waste. However, the dioxin released from these plants has given rise to some primary problems raised by studies promoted by the Environment Agency and the Fisheries Agency: these poured huge quantities of dioxin into rivers and coastal waters, later found in fish and other organisms in Tokyo Bay. Therefore, in 1990, the Government issued a regulation for the prevention of dioxin emissions, establishing precise rules on the operation of incinerators and the amount of dioxin they would release. The regulation was then refined in 1997.

In the 2000s, in order to reduce heavy dioxin emissions, Japan opted for a society based on recycling, increasingly limiting incinerators, but even today, a large part of the waste (about 78%) goes to incinerators.

Japan, by signing the Kyoto Protocol, is obliged to reduce its CO₂ emissions and industrial waste, control dioxin emissions, electronic waste and review its nuclear policy, especially following the Fukushima disaster in 2011.

In 1999 the Kyushu Recycle and Environmental Industry Plaza was founded, an organization dedicated to the development and establishment of industrial waste management and recycling companies, pollution prevention equipment, eco-materials and new energy sources, including photovoltaics and biomass.

The Environment Agency was promoted to the Ministry of the Environment in 2001 and Japan proved to the world that it could improve the quality of the environment in tandem with its economic development. However, the level of water pollution still did not meet minimum quality standards.

In 2004, Japan gained foreign investments, thanks to the collaboration with embassies in 11 countries, thus being able to introduce important innovations, especially in the recycling of materials such as steel and cement and in sustainable high technology.

In 2006, Japan's main environmental problems were still global warming and the ozone layer, waste recycling, chemicals and low participation in international cooperation. Ozone pollution still remains one of Japan's biggest problems today, so much so that Mount Fuji is visible from Tokyo about 80 days a year due to smog. According to a 2017 study, air pollution causes at least 60,000 premature deaths each year. Although the Japanese country saw a sharp increase in air quality between 1990 and 2017, the mortality rate from air pollution has continued to rise. Tokyo, thanks to the intervention of the then Governor Shintaro Ishihara, imposed a limit to gas emissions from industries, to cut them by about 25% by 2020, compared to 2000 levels. In the same year, the Government launched an awareness-raising campaign reducing CO₂ emissions into the air by about 1.4 million tons. Cool Biz and Warm Biz campaign, which advised workers to wear lighter work clothes in summer and heavier work clothes in winter.

In addition, the Government launched several projects in some cities designated by the Minister of Industry, the eco-towns, where young researchers could contribute to the support of eco-industries with eco-sustainable innovations.

Since 1997, Kitakyushu has been the first sustainable city with a waste management system capable of treating almost all persistent organic pollutants.

Another project is the Fujisawa Smart Town, a housing complex consisting of about a thousand houses designed to be energy independent. Built in 2014, 50 km from Tokyo in a disused Panasonic site, the town aims to reduce CO₂ emissions, thanks to the photovoltaic systems installed in each house.

According to the Earth Simulator's calculations, the temperature in Japan will still increase from 3 to 4.2 °C during the period 2070-2100 and summer precipitation will increase steadily.

In 2009, a law was enacted for the recycling of specific categories of household appliances, which requires more initiatives regarding recycling, both for consumers and manufacturers of household appliances.

According to some Japanese environmental studies, millions of computers and televisions are discarded every year, some of which are reconditioned and exported mainly to developing countries, such as the Philippines.

Since 2010, the Japanese government has supported the recycling of mobile phones and other electronic equipment, from which gold, silver, palladium and copper are recovered.

Before 2011, year of the Fukushima disaster, Japan made 30% of its energy supply from nuclear power plants. Now, the Japanese line is to reverse the trend trying to use renewable energy, as the plants pour tons of contaminated liquid into the ocean. But in spite of everything, with the rise of Prime Minister Shinzo Abe, the government has declared that it cannot deprive itself of nuclear power because of the lack of renewable energy suitable for the country.

Ten years ago, a Japanese environmental project called "*The Satoyama Initiative. Societies in harmony with Nature: an inclusive approach for communities, landscapes and seascapes*", was born, a collaboration between the Japanese Ministry for the Environment, the United Nation University, UNESCO and UNDP. Currently, the project involves 267 institutions, including governments, NGOs and other public and private

entities around the world, with over 80 case studies, the results of which are published on the reference website www.satoyama-initiative.org.

Its main function is to meet the goals set in Paris through the implementation of local projects in rural or maritime areas with an integrated approach, in order to preserve biodiversity, to build people's resilience, to implement socio-ecological human activities, now also to get out of the Covid-19 emergency.

Socio-ecological production landscapes and seascapes (SEPLS) is a description of some spaces around the world where human interaction coexists with nature through adaptation and modification of the local environment, leading to sustainable use of natural resources, based on careful observation and growing experience. The sustainable use and management of natural resources in various productive activities (including agriculture, grazing, fishing, non-timber harvesting and many others) have created landscapes that provide diverse goods and services for people, while maintaining biodiversity and ecosystem functions. The mosaic model of possible uses of land, water and natural habitats ensures the maintenance of biodiversity, with an autonomous circularity of resources. Consequently, this leads to sustainable self-sufficient systems of ecosystem services for human and natural well-being. Such socio-ecological arrangements also increase resilience in the face of various natural and economic hazards.

The many case studies shared on the website testify to the fact that the Satoyama initiative also provides livelihoods for local communities by supplying food, fuel and building materials, as well as means of income generation through ecotourism, handicrafts and other local products. In addition, a variety of additional cultural and spiritual services are offered.

The vision is typically Japanese, emphasising the need to develop types of society 'in harmony with Nature'. The representatives of the countries involved exchange key lessons they have learned over the past decade through the exploration of integrated management methods applied in the various case studies, also with a view to converting certain paradigms that have proved particularly useful into binding national and international standards. In particular, the fundamental role of local communities and indigenous peoples is highlighted, and they are called upon to cooperate with the government to slow down the loss of biodiversity, firstly by protecting wild areas and secondly by promoting all those productive activities compatible with the conservation of local landscapes and microclimates: agriculture, forestry and fishing will follow the methods that have proved successful for decades, whose culture has been passed down from generation to generation, both to maintain a positive relationship with the environment and to achieve the goal of creating societies that are aware of and in harmony with Nature.

These territories have often been under the sway of quite different modern socio-economic conditions, inspired by capitalist exploitation, which have caused a very dangerous general deterioration.

Economic speculation and deep-rooted poverty have led to an inappropriate use of resources, while monocultures and depopulation of rural areas have resulted in their cultural and biotic impoverishment, which has also had a serious impact on the general well-being of the population.

Alongside the classic systems of protection of certain areas where practically no productive activity is possible, there is the hypothesis of allowing other areas with certain particular characteristics to be maintained, which instead contribute to enhancing their biodiversity and a high quality of human life. These new paradigms are then promoted and shared globally and possibly give rise to new state laws suitable for this kind of sites. For these reasons, much importance is attached to the regional or local dimension and to the underlying philosophy of effective harmony between man and nature, with a view to exchanging best practice at international level.

The Satoyama project is able to deal with various sectors such as food, water and fuel demand, while respecting the ethno-historical, cultural and ecological characteristics of the places, reconstructing or conserving small ecosystems, also in order to implement their capacity to combat climate change and widespread poverty. Globally, we can see all the efforts to produce food for 9 billion people, while trying to reduce emissions from agriculture with new technological methods.

The Satoyama Project allows for the treatment of places such as crops, settlements, forests and grasslands, although they differ from each other depending on climatic, topological, cultural and socio-economic conditions. There are no unified definitions to describe those landscapes, and consequently they are known under various terminologies. Such landscapes are widely found throughout the world. Each

country or region has a term to define these landscapes. “Satoyama”, for example, is a Japanese word for a “yama” (mountain/forest/land) that is located in the vicinity of a “sato” (village) in a Japanese agricultural or mountain settlement.

The satoyamas were used as forests for firewood, charcoal, agriculture and hay cultivation. The case-study landscapes are composed of agricultural land and human settlements in mosaic patterns. The satoyama areas have given local communities a sense of their roots and identities. The GEF Satoyama Project has also helped save many endangered animal species in areas such as the Burma region and Indian Ocean islands, other areas of Thailand, Madagascar, Mauritius and Seychelles, as well as the tropical Andes region, Colombia, Ecuador and Peru, benefiting and involving hundreds of thousands of people.

In Thailand, for example, some Karen communities felt the need for institutional help to preserve and pass on their cultural heritage to future generations, but with systems that valued informal exchange; therefore, some projects were initiated, such as using stories, poems and indigenous proverbs to pass on that knowledge; some elders organised camps to teach young people traditional farming and cooking methods. In return, the young people helped to promote this culture via the web.

In Madagascar, as knowledge of medicinal plants was disappearing, nurseries were set up as classrooms and participants could take the seedlings home and grow them at the end of the sessions. This initiative has renewed interest in certain species of medicinal plants and revitalised their production.

Each reality is unique. Therefore, the activities implemented can be very diverse, but always keeping the focus on the objectives already highlighted and with similar patterns.

The key points of the Satoyama approach can be summarised as follows:

- knowledge creation and awareness development;
- exchange of information between institutions and governments and between different international partnerships;
- evaluation of the tools that can be used and possible synergies in relation to a specific site;
- collection of results, comparison and implementation;
- study of the social and economic dynamics of a satoyama areas;
- conservation and maintenance of favourable conditions for a wide biodiversity, with the minimum possible impact;
- assessment of the direct and underlying causes responsible for the decline or loss of biological and cultural diversity of terrestrial and marine landscapes;
- improve human, institutional and financial capacities to ensure project effectiveness, including the study of appropriate policies.

In order to maintain the vision of this initiative, a three-pronged approach is being taken to develop supply, cultural and support services by applying traditional knowledge to modern societies through the promotion of a fruitful dialogue of mutual knowledge. It will be crucial to consolidate knowledge on ecosystem services and values, particularly on the supply of various substances such as food, water and fuel that are essential for human life and play a key role in counteracting damage to living species such as insects; reducing soil erosion, improving water quality and fuel supply, as well as providing the appropriate social, cultural, religious and psychological support. Natural resources must be used sustainably without harming the balance and stability of ecosystems. Therefore, industries such as agriculture and forestry must be conducted in a way that takes advantage of natural processes, while ensuring the circulation of natural resources and the reproducibility of organisms. The formation of healthy ecosystems can certainly contribute to mitigate the effects of climate change by improving carbon stocks and the supply of ecological biomass, by reducing harmful emissions, and by implementing local production and eco-tourism.

Wisdom on the reuse of resources and the harmonious coexistence of humans with nature is passed on in an experiential and practical way. Such traditional ecological knowledge has contributed to the development of taxonomy, pharmacology and agricultural sciences, providing information for modern science. As an alternative to the perspective that sees man and nature as opposed to each other, typical traditional wisdom is in many cases rooted in a worldview in which people, animals, plants and other structures of the universe are interconnected. The integration of modern scientific knowledge with this view

of nature, history, cultures, traditions and customs that have produced such landscapes implies a renewed respect for the ecosystems themselves.

The Satoyama project proposes minimal impact interventions in relation to tillage, agro-forestry and animal domestication; it tends to incorporate rural areas with contiguous modern cultivated areas. There are many examples of sustainably co-managed resources that have long been practised by communities; these new connections are intended to stimulate the participation of new participants, such as urban residents and the private sector that previously had only a tenuous relationship with rural villages. Excessive overburdening of ecosystems weakens their resilience and leads to deterioration in their quality: livestock grazing and timber harvesting that exceed nature's regenerative capacity in that area, salt accumulation caused by over-irrigation of crops, placing plants that are not suited to certain soils cause deterioration. On the other hand, in areas such as forests, grasslands and agricultural areas where biodiversity was once maintained by the effects of limited human activities, the abandonment of such activities has altered the composition of the flora and agro-biodiversity. For these reasons, it is essential to accurately assess the natural characteristics, topography and structure of the landscape to measure its resilience. As ecosystems are dynamic rather than static (and therefore involve a degree of uncertainty), their management must adapt from time to time, so that ecological services can be utilised at an optimal level; monitoring and action plans must be revised in a flexible manner as the need arises.

In terms of recycling natural resources, leaves from forests, plant debris from farmland and livestock manure are usually used in fields as compost. The efficient use of biomass fuels will lead to a reduction in the volume of carbon dioxide produced by the combustion of fossil fuels; this area is very important, as it will be instrumental in achieving low-carbon societies in the future. A comprehensive cross-sectoral approach is needed to ensure that the movement of natural resources between different types of land use works effectively. Giving local communities a sense of uniqueness will stimulate their reinvigoration and discourage people from leaving rural areas to seek opportunities in cities. Socio-ecological productive landscapes can now meet the needs of urban consumers and tourists who wish to regain knowledge of local cultures and consume typical products. Activities such as green tourism (which promotes the coexistence and interactive relationship between cities and rural areas) and fishing communities playing a role in the management of forest conservation projects in watersheds are just a few examples of how the Satoyama philosophy works. In contrast to modern large-scale commercial practices such as monocultures, socio-ecological production landscapes include multifunctional activities that lead to the production of supplies (food, fibre, energy), as well as the provision of cultural and recreational services. Such projects are able to reconcile economic and social development with environmental conservation and the preservation of local diversity. By stimulating a participatory role for local residents, they will be able to find additional benefits, such as job creation, improved social and food security, and the reinvigoration of locally rooted businesses, leading to poverty reduction. For the revitalisation of communities, new values need to be created such as ecotourism, the conscious use of biomass resources, the development of certification schemes for environmentally friendly farming and crop production methods, the development of locally specific baskets of goods and services and fresh-farm schemes that directly link consumers with producers. The partnership system of the Satoyama project has the potential to establish an interdisciplinary and holistic approach. Currently, the Japanese Ministry of Environment, UNU-IAS and other relevant entities are engaged in discussions on how to develop new cooperation projects through such international partnerships. Among the entities most active in the project is the World Agroforestry Centre (ICRAF), which studies how smallholder families strategically increase the use of trees in agricultural landscapes to improve their food security, income, health, housing and energy resources. The Centre's mission is to generate science-based knowledge about trees, palms and shrubs and how they play a role in agricultural landscapes in order to advance policies and practices that benefit the poor and the environment. ICRAF makes an important contribution to the Satoyama Initiative, as the main threat to most biodiversity is the conversion of natural habitats to industrialised areas. This research increases our understanding of why, where and how farmers around the world continue to maintain and use agrobiodiversity as part of their livelihood strategies. The survival of species threatened by these industrial processes urgently requires action at regional level, especially for those found in marine and freshwater biomes. The Platform for Agrobiodiversity Research

(PAR) is currently working on the identification and recognition of indigenous peoples and rural communities, whose maintenance of agrobiodiversity has a primary role in climate change resilience strategies. UNU-IAS is in the process of assessing other satoyama areas in Japan, to which it applies the Millennium Ecosystem Assessment paradigm. It also aims to provide policy options for building other sustainable societies in Japan by developing plausible future scenarios.

Recently, UNESCO has been promoting the exchange of information and good practice on innovative approaches to territorial and rural development based on the promotion of local diversity. UNESCO's added value lies in its reliance on the natural and social sciences to address these issues in a holistic manner. The Man and the Biosphere (MAB) programme and the World Network of Biosphere Reserves both aim to use interdisciplinary approaches in the search for solutions. UNESCO is uniquely placed to carry out these tasks.

In 2008, IUCN took steps to divide the various types of protected areas into six management categories, where Category V landscapes are very similar to the Satoyama landscapes. Currently, IUCN is promoting bilateral and multilateral projects to publicise case studies and their results. At the present time, the Japanese Ministry of Environment, UNU-IAS and IUCN are engaged in discussions on the issuance by IUCN of further investigative reports, especially in the field of food security and the role of agro-ecosystems in biodiversity conservation, as well as other in-depth studies on domestic and medicinal plants.

The Global Environment Facility (GEF) financial mechanism is crucial for the development of conservation and sustainable use projects in developing countries and countries with economies in transition. The GEF has provided crucial support for the preservation of biodiversity in productive and marine landscapes, in addition to its well-known support for protected areas around the world. The GEF has invested in many agro-biodiversity projects that revitalise traditional knowledge, sustainable forest management projects and integrated ecosystem management projects with indigenous and local communities. GEF support is particularly focused on removing barriers that prevent public and private sector actors from mainstreaming biodiversity. It supports the development of policy and regulatory frameworks and builds the necessary institutional capacity. It also promotes voluntary environmental certification of private parties to generate biodiversity gains through market mechanisms.

Currently, the Satoyama Initiative actors are focused on resolving issues such as the energy sector, poverty reduction, necessary governance adjustments and conflict prevention and management.

FAO's Globally Important Agricultural Heritage Systems are involved in the identification of key elements of the Japanese initiative that have global significance.

An international NGO, Ecoagriculture Partners, has coined the term 'eco-agriculture' and its programmes include familiar market strategies such as payments to farmers for ecosystem services and eco-labelling of agricultural and forestry products. In addition, it promotes the alignment of agriculture and food security policies with ecosystem management and climate change adaptation policies.

Terroirs et Culture, an association of French origin, works in the Mediterranean and internationally. The term *terroir* refers to a geographical area with defined boundaries, where a human community generates and accumulates throughout its history a collective productive knowledge based on a system of interactions between biophysical and human factors. The combination of the different techniques involved, revealing their originality, gives a good reputation to the goods coming from the *terroir*. The association promotes a platform (Planète Terroirs), on which the various scholars can confront each other and share scientific reflections on the subject.

Russia

As for the United States, it is the President-in-Office of the Council who also draws all the guidelines in environmental matters. Recently, Russian President Vladimir Putin expressed his thoughts on climate change, arguing that these are natural and unstoppable cyclical changes that do not only affect the contemporary era: during a visit to the Arctic archipelago of Franz Joseph's Earth, Putin spoke at a forum of environmental researchers held in Arkhangelsk, even claiming that climate change is beneficial in some respects and that it is not caused by human activities. Addressing the countries that suffer the serious negative effects, he said that "they must learn to adapt to new problems".

The Arctic area is deeply affected by the increase of the Earth's temperature: the retreat of the ice is enormous, but according to Putin this phenomenon is positive, as it will allow to exploit the immense natural resources buried under the ice of the North Pole.

Russia is the largest country in the world and covers more than an eighth of the inhabited territory of the Earth. It is therefore in everyone's interest that its legislators produce sound environmental sustainability policies at the expense of economic growth. As part of the partnership programme, on October 24th, 2018 the Italian MATTM and the Ministry of Natural Resources and Environment of the Russian Federation signed in Moscow a Memorandum of Understanding for cooperation in the field of environmental protection and sustainable development, with the aim of strengthening and coordinating joint efforts in environmental protection and promoting sustainable development. The main areas of cooperation are: adaptation to climate change, implementation of best available technologies to reduce greenhouse gas emissions, integrated management of water resources, forests and waste, prevention and monitoring of air pollution and conservation of biodiversity. Within the SUST-RUS project ("Spatial-economic-ecological model for the assessment of sustainability policies of Russia") funded by the EU, the research team has developed a model building method that helps Russian policy makers in their choices for sustainability in the short, medium and long term. The researchers, coordinated by the Russian Centre for Economic and Financial Research, have developed sustainability indicators that allow the measurement of the social, economic and environmental effects of sustainable policies. The team used the model to assess the potential effects of a number of important environmental policy measures, demonstrating the reliability of this method and its applicability in other countries, both in the short and long term. The SUST-RUS method is a support for the international community to formulate sustainable policies that can rewrite social, economic and environmental balances.

In May 2020, there was an environmental disaster beyond the Circle Arctic Polar: 20 thousand tons of diesel fuel were poured into the Shadow River for an accident at the Norilsk Nickel plant, which is why Putin declared a state of emergency. The company was accused by the President himself of not raising the alarm in time, when the oil slick had travelled more than 20 km, covering an area of 350 square km. and polluting a second river. This accident, and others similar, occur for the intensive exploitation of the area above 66°Parallel, where huge quantities of gas, oil and precious metals are available. The news has provoked a strong public reaction. Putin denounced live on TV the industry leaders responsible for the disaster, but also the local governor who had candidly confessed to the president that he had only learned of the incident from social platforms. The accident was caused by the collapse of the supports of a huge circular tank due to the heating of the ground. In that area the soil is normally frozen in summer and winter, thanks to the permafrost, which, however, melted and caused the poles to collapse deep into the ground. The technicians tried to stop the disaster with solvents and containment floats. But, according to local environmentalists, the situation is extremely critical. After Putin's intervention, the director of the plant Vyacheslav Starostin was arrested pending trial for culpable pollution. This is the second major environmental accident that occurred in the Russian Arctic: in 1994, there was an oil spill from a Komi pipeline, which ended up in the Pechora River to the Barents Sea. In the following months, with the torrential rains, the scrub widened further, so much so that the clean-up took ten years.

India

The Indian economy is the third largest in the world (after China and the USA) and is inhabited by 18% of the world population. It is assumed that by 2040 India will be the largest consumer of energy from traditional fossil energy sources and the Indian energy system will have to quadruple in size to meet the rising energy demand. In 2016, India ratified the text of COP21, along with other Asian giants. The Indian government has committed itself in order to reach the goals set in Paris, to reduce carbon emissions by 33-35% compared to 2005 levels by 2030. The goal is to meet 40% of energy demand with alternative energy sources. Most Western countries have approved environmental legislation to protect the environment and China has committed to eco-civilization to enter the new-normal period, too.

On 30 October 2017, in New Delhi, the Italian MATTM and the Ministry of Renewable Energy of the Republic of India signed a Memorandum for cooperation in two main energy sectors: the promotion of

renewable energy from solar, wind, hydroelectric and biomass sources and the development of new technologies in the energy field, especially with regard to energy storage. The cooperation activities take advantage of the collaboration between Italian and Indian companies, with the sharing of information and experiences related to technical aspects and capacity building activities.

Indian environmental legislation, in spite of the strong pollution of New Delhi, has always been very developed, thanks to ethical and religious factors of Indian culture: the cult of Nature (the sun, moon, earth, air and water) was not only man's primitive response to the fear of the unknown, but was born from the deep reverence shown towards natural forces, given by the belief that life is a unique and continuous phenomenon and that even a small change in the ecosystem is able to destroy harmony. Guru Nanak, founder of the Sikh religion affirmed that *"The air is like God, the water is the father and the earth is the mother. It is through the harmonious interaction of all these three vital ingredients that the entire universe is sustained"*.

Indian environmental legislation has developed more and more consistently over the years, as evidenced by the Indian Forest Act of 1927 of British India. Currently, despite its abundant legislation, India is one of the most polluted countries in the world. Since the early 1970s, India has had a system based on five-year plans that have always protected parks, nature reserves and wildlife within these protected areas. There are also criminal laws against poaching and trade in products derived from protected animals. The Wildlife Protection Act of 1972 protected biodiversity and was amended several times. It was followed by the Water Prevention and Control of Pollution Act of 1974. In 1976, the Indian Constitution was amended to introduce new articles for environmental protection. The National Forest Act of 1980 and the Environment Protection Act of 1986 were amended several times afterwards.

1988 was the turning point for the conservation principle as a fundamental principle. Since 1990, several independent authorities have been set up to monitor pollution levels. In 2002, the Biological Diversity Act was written and, in 2006, the National Environmental Policy.

Recently, NASA reported that the Planet today is a greener place than 20 years ago: while the Amazonian forest burns, in 2016 almost 50 million trees were planted in India in less than 24 hours, thanks to the voluntary work of 800,000 people from Uttar Pradesh. The Indian Prime Minister has launched a measure (*Compensatory Afforestation Fund Management and Planning Authority Bill*) in favour of the forest-cover of vast natural areas with the aim of creating a biospheric sink. According to the Indian Government, this forestation process could reduce CO₂ emissions by 20% by 2040.

Under the Paris Climate Agreement, India has designated over \$6 billion to extend the country's forest cover to 235 million acres by 2030. The interest shown by the Indian government is an important signal towards a concrete reduction of global pollution (India has 14 of the 15 most polluted cities in the world).

India is a party of the 1992 Convention on Biological Diversity (CBD). Before the CBD, India had different laws to govern the environment.

In India, at the end of the 1980s, a very particular legislative phenomenon took place, due to the disputes that the Indian Government was raising against infrastructure projects made to solve environmental problems (hydraulic works, freeways, power generation projects) to block or delay them: the growing legislative activity of the Indian Supreme Court in the area of governance allowed the unblocking of such projects, also due to the bankruptcy and inactivity of government agencies and state-owned enterprises; civil society had begun to file several complaints of public interest with the Supreme Court and the High Courts of the individual states.

Because of this phenomenon, in those years the Supreme Court was actively involved in the country's environmental issues, having to interpret environmental legislation directly and ending up establishing new principles, creating new institutions and structures with broad powers.

The supremacy of the judiciary power in environmental matters was more evident right after the Bhopal disaster in 1984, when the Supreme Court established (well before other Western supreme courts) the principle of sustainable development and precaution, urging the legislator to enact appropriate legislation. The Supreme Court is therefore fundamental to Indian environmental justice.

Africa and South Africa

Africa owns about 30% of the world's mineral reserves, 8% of the world's natural gas, 12% of the world's oil reserves; the continent has 40% of the world's gold and up to 90% of its chromium and platinum. The largest reserves of cobalt, diamonds and uranium in the world are found in Africa. The continent holds 65% of the world's arable land, and 10% of the world's freshwater sources.

Although the historical responsibility for climate change and the exploitation of natural resources lies primarily with the most industrialised nations, Africa can now aspire to become a modern continent, achieving many of the goals of the Paris Protocol through future development based on a circular, low-emission economy. With the Africa 2063 strategy born in 2015, initiatives in renewables for a greener future and projects to combat desertification in the African area have increased.

The Africa 2063 Strategy contains an agenda for the socio-economic transformation of the continent on the basis of NEPAD (Africa Development Partnership), the Nigerian ECOWAS, AEC Treaties and the foundations of the African Union, which have provided the basis for an integrated and peaceful, democratic continent with a dynamic force on the international scene. Nowadays, Africa contributes less than 5% of global carbon emissions, but bears the greatest impact due to climate change.

According to the IEA's Africa Energy Outlook report, sub-Saharan Africa will start unlocking its vast renewable energy resources in the coming years, including solar and hydropower, which is currently only exploited to 10% of its potential. The coastal countries (from Senegal to Mozambique) also have great wind potential. Besides, geothermal energy will be the second largest source of power in East Africa, mainly in Kenya and Ethiopia.

At the present time, the first mini-grid and off-grid projects powered by photovoltaic, solar and mini-wind are abounding, like the Renaissance Dam Project in Ethiopia. IRENA (International Renewable Energy Agency), led by the Italian Francesco La Camera, follows numerous projects throughout the continent, such as the regional Africa Clean Energy Corridor initiative, aimed at accelerating the development of renewable energy potential and its cross-border trade within the East African Power Pool (EAPP) and the Southern African Power Pool (SAPP). There is also a proliferation of bottom-up initiatives, such as eco-friendly restaurants, numerous new businesses in circular construction, plastic recycling to turn it into flooring and tiles. For example, Sylvere Mwizerwa uses banana waste to create affordable tampons for communities in Rwanda. In Senegal, water pumps, powered by solar panels behind them, allow fields to be irrigated by cutting diesel costs and CO₂ emissions.

The Italian Minister of the Environment Sergio Costa recently inaugurated the Centre for Climate and Sustainable Development for Africa in Rome, in the presence of the Prime Minister Giuseppe Conte, the Director of UNDP (United Nations Development Programme) Achim Steiner and the General Director of FAO Graziano Da Silva, declaring that Italy is concretely committed to supporting developing countries, especially Africa, accompanying its citizens in a path of self-sufficiency in the energy and economic sectors. Italian Minister Costa supports the exchange of information in Europe and in the G7 on initiatives in Africa, in order to reach faster the goals set by the Paris Agreement and Agenda 2030, ensuring a primary role for Africa with African representatives by geographical and linguistic areas. The newly established Italian Centre must also be the reference point for FAO and UNDP initiatives. The Minister aims to launch several projects to safeguard the areas attacked by desertification and climate change, the Sahel belt, which crosses more than 10 African countries, asking investors to finance sustainable agriculture.

The partnership projects currently implemented cover several sectors: support for renewable energy and energy efficiency, water management, air quality, agriculture, sustainable buildings, implementation of green financial instruments, protection of coastal areas, management of extreme events and weather warnings, integrated waste cycle, environmental governance, forest management and protection of biodiversity, with concrete investments. South Africa has in turn been a strategic partner of the European Union since 2007 for climate change at the annual EU-South Africa summits and during the UN climate conferences.

South Africa played a decisive role in the adoption of the Paris Agreement: the South African Minister for Environmental Affairs is a member of the African Ministerial Conference on the Environment (AMCEN), with which the European Commission maintains a regular dialogue.

South Africa has devised a procurement programme for independent renewable energy producers that will enable emissions limitation and decarbonisation by 2050, with innovations in CO₂ capture, electric and hybrid vehicles and a long-term plan to introduce an emissions tax. The country expects international support for the implementation of these measures. Among the most important projects resulting from international partnerships are the Low Emission Urban Strategies (Urban-LEDS) and the Programme for Energy Efficiency in Public Buildings (EEPBP).

Australia

The environmental policies implemented in recent years on the Australian continent have basically followed the fate of the United States and the Russian continent: Australia is characterised by a conservative political majority, which, when it comes to environmental policies, is in denial about the use of coal in relation to its direct effects on climate change.

Demand for coal and liquefied gas in Asian countries for thermal power plants is rising, and this sector is Australia's largest industry, providing around 50,000 jobs. For this reason, the Minerals Council of New South Wales (the coal cartel) and some industry groups such as the Queensland Resource Council, strongly support and defend the market, arguing that Australian coal can boast relatively low emissions and is of high quality, therefore compatible with the Paris targets. But the last three years have also seen Australia in the global news for the devastating wildfires that have occurred, leading to record temperatures, windstorms and severe drought, which have caused a huge loss of biodiversity.

Australia, already characterised by a torrid and dry climate, has suffered a one degree Celsius increase which, according to the CCPI (Climate Change Performance Index), is attributable to the increase in greenhouse gas emissions due to the use of coal for major activities, including electricity production. This increase in temperature has led in particular to the bleaching of the 2,300 kilometres of coral reef surrounding the island's north-eastern coast on the east coast, as well as to its advancing decline (it has fallen by more than 50% in the last 30 years); besides, the coral reef is considered a UNESCO heritage site.

The CCPI report highlighted the concomitant decline in the number of spectacled flying foxes, which are vulnerable to heat (100,000 before 2016, plummeting to 47,000 in 2019); in addition, the CCPI identified a further 40 endangered species, which would have increased by 30 per cent compared to 20 years ago due to extreme heat, very low humidity and declining vegetation growth. The flow of rivers has decreased by about 40% and rainforests (Gondwana, Blue Mountains and Gippsland) have been severely affected by fires. Specifically, the CCPI report considers 7 main indicators to measure Australia's unique environmental conditions: flood rate, runoff, vegetation growth, area of foliage, soil protection, tree cover and number of hot days. In 2020, the CCPI gave Australia the lowest rating for energy use and the increasing amount of greenhouse gas emissions.

The Australian National University's 2019 Report also reported that year as the worst, in relation to the continent's environmental conditions in two decades. Scientists agree that carbon emissions contribute to drying out the atmosphere, which is already particularly hot in some parts of Australia, and therefore create climatic conditions that greatly promote the risk of wildfires. But the CCPI reports are routinely denied by the conservative government in Canberra led by Scott Morrison and the Australian mining industry, who deny any direct link to the increase in greenhouse gases and the massive use of coal. His predecessor Malcolm Turnbull had also expressed the same sceptical view.

The CCPI's calls for the phasing out of all coal-fired power stations by 2050 and the conservation of fossil fuel reserves are currently ignored by the current Australian government, whose energy policy still relies heavily on the mining industry.

Coal still provides 60% of the continent's electricity, and Morrison supports its production, keeping prices low and protecting the coal lobby, arguing that the academics' approach foments unwarranted psychological terrorism.

For their part, these lobbies are promoting the use of a very expensive experimental technology (Carbon Capture and Storage - CCS) for storing the CO₂ produced underground and under the sea. But this technology is considered by scientists to be too slow and costly for the purposes set out in the Paris agreements.

The particularly dry and torrid environment in some parts of Australia creates a lot of drought and a marked increase in damage for livestock breeders, farmers and the flourishing wine industry in the south, as well as an exponential increase in the number and size of fires; in Queensland, in 2018, over 200 fires were recorded at the same time; the following year, the fires were so vast and consistent that they lasted for four whole months, forcing part of the population to evacuate.

The images of these severe episodes quickly went around the world, but the response of the Australian institutions was slow and totally inadequate to the emergency, so much so that the situation only began to improve when temperatures and winds dropped naturally in Victoria and Sydney.

Following the devastating fires, heavy flooding and storms with high winds occurred in South Wales in January 2020, and in Cooma, a provincial town south of Canberra, a water tower exploded, flooding the town with millions of litres of water.

In Mallacoota, a tourist centre in Victoria, there was a flash fire that forced residents to escape to the beaches at night and throw themselves into the sea, then rescued by some ships, as conditions on land were poor due to the poor visibility caused by the smoke from the huge fire. The government ordered the evacuation of an area of 14,000 square kilometres on the northern border of Victoria, but not in the Mallacoota area (source: *The Guardian*). In total, in December 2019, the fires are believed to have burned more than 11 million hectares of land and killed a billion animals, destroyed 2,500 homes and charred ancient forests, as well as releasing tonnes of CO₂ and particulate matter into the atmosphere (source: WWF Australia).

These catastrophic events, and above all the recent massive fires, have provoked a lively response from the environmental movement, which has finally begun to denounce the Morrison government's very poor policies to protect the environment and citizenship: in particular, the movement has stressed the inefficiency of tackling such emergencies, often leaving citizens alone, in the name of a coal industry that is essential, according to the Prime Minister, because it still provides most of the country's jobs.

Australia's environmental critics have been supported by the Extinction Rebellion movement, which was born in England in the last few years and has sided with various movements around the globe. ER is known for staging flash-mobs, various civil disobedience operations against the Australian government, as well as spreading news through lengthy information campaigns, in particular through the encrypted app Signal. In the two weeks of the fires, the Sydney-based group's Instagram account grew from 1,000 to 35,000 followers (including firefighters, farmers and entrepreneurs of all kinds) after the environmental movement had been virtually stagnant for years.

Although the effects linking greenhouse gas emissions and global warming are indirect, they are widely recognised by the public and the scientific community. This view is strongly opposed especially by the more conservative wing, the Liberal Party, led by former Liberal Prime Minister Tony Abbott, who suggests and promotes Australia's withdrawal from the Paris Agreement. But despite this view, in recent years Abbott had still promoted cutting greenhouse gas emissions and investing in renewable forms of energy, not by cutting emissions, but by using climate credits from better performance, still in compliance with the Paris agreements.

In 2018, former Progressive Wing Prime Minister Turnbull pursued a policy (the National Energy Guarantee - NEG), which forced power companies to comply with set emissions limits. This policy was also challenged by Abbott, which led to a lack of confidence in Turnbull. At that point, the new Prime Minister Morrison announced early on that he would suspend the NEG. The NEG, though deemed insufficient at the time, is the fourth environmental policy suspended by Australian Liberal governments since 2013.

The environmental movement has failed to budge on Morrison's stance, who even in his New Year's Eve 2020 speech to the burning nation, was careful not to link the fires to carbon emissions and climate change, instead stating that Australians are used to dealing with 'natural disasters, floods, world wars, disease and drought' and that he will not make cuts to the coal industry. Anyway, Morrison remains opposed to the possibility of officially withdrawing Australia from the Paris Treaty.

With regard to agri-environmental policies, the European Union, Australia and the United States have introduced measures to reconcile production and market needs with environmental conservation. In

Australia and the United States, payments based on contract auctions are the most widely used instruments, while in Europe, fixed-cost payments are used, which have simpler administrative and technical management.

The policy mix is different and the instruments are different. Agri-environmental programmes aim to induce voluntary changes in farming practices in order to achieve better results in return for financial support to cover management and investment costs. In relation to agri-environmental payments, the question is whether it is better to apply fixed payments, as in Europe, or contract auctions. Australian environmental policy is essentially based on reverse auctions: the state pays landowners and businesses to reduce pollution and greenhouse gas emissions. But in the most recent auction, very few projects have enjoyed such benefits. Generally, all instruments used by Europe, the US and Australia tie agri-environmental payments to parameters such as land and other inputs or focus on farmers' practices. For auctions, a multi-criteria index, the Environmental Benefit Index (EBI), can also be used. During the auction, farmers offer to perform certain actions that will produce some environmental benefit or conservation improvement in exchange for payment for these actions. Once all bids have been received, the relevant public agency establishes a ranking list for payment, until the budget is exhausted.

CONCLUSIONS

The concepts of risk and risk mitigation in *risk assessment*; The concepts of *corporate governance, knowledge management and regulatory compliance*; The concept of *prosumer*; Environment as a fundamental human right.

The Concepts of Risk and Risk Mitigation in Risk Assessment

The CSR sector has led to the emergence of certain concepts, now widely applied, within the business and public sector. Among these, it is good to know the meaning of risk assessment, whose three main phases constitute an ideal process that can be unanimously shared: risk identification, risk analysis and risk assessment. A very good example of risk assessment can be found in the MiSRaR project (Mitigation of Environmental Risks in European Regions and Towns, Mitigating Spatial Relevant Risks in European Regions and Towns), which includes 7 partners from six EU countries (the Netherlands, Estonia, Bulgaria, Greece, Portugal and Italy, with the Province of Forlì-Cesena), working together to share experiences in risk management, particularly through spatial planning and design. Within the MiSRaR project, two visions of the risk concept are indicated:

- 1) Risk = probability x impact;
- 2) Risk = hazard x vulnerability (for example, a flooding by itself can be seen as a danger, but if it occurs in an uninhabited area with no economic or environmental value, the risk of the spread of collective panic will be zero or minimal).

Vulnerability is a heterogeneous concept consisting of exposure and susceptibility.

For example, the vulnerability of a building in the event of flooding depends both on the degree of exposure (water height) and on how much the building has actually been undermined by water (materials used for its construction and resistance).

The various parameters must be combined to get to a result that gives a different degree of risk depending on the purpose of the various analyses. In the risk assessment, probability and impact should be assessed separately: each risk component is important to identify preventive or risk reduction measures and to identify where there are most mitigation opportunities.

The preliminary risk assessment must be included in the development and planning. The set of risk and emergency management measures is often referred to as multi-layer safety, a definition that originates in industrial processes. This concept is based on the principle that there are different levels of safety related to a risk.

The MiSRaR project study led to the listing of a number of risks that should normally be considered in risk assessment processes:

1. natural disasters (floods, earthquakes, landslides, forest fires, volcanic eruptions, exceptional climatic conditions);
2. technological risks (accidents arising from the production, use, storage and transport of flammable, explosive, toxic dangerous substances), nuclear/radiological accidents, disruption of public utility networks (gas, electricity, drinking water, waste water treatment), disruption of computer and telecommunications networks;
3. transport risks (air, water, rail and road accidents);
4. public health (epidemics, risks from long-term exposure);
5. social risks (civil unrest, collective panic).

It is also necessary to consider the risks due to terrorist attacks and sabotage, which require a different approach from that indicated above.

The identification of risks should also include foreseeable future developments (climate change, new developments in the territorial system, technological evolution). For example, climate change has a significant impact on flooding and landslide risks and new media technologies (SMS, social networks).

It is also important to consider past risks and accidents.

The creation of a risk map is a necessary step towards risk awareness by all users (citizens and companies): it must be disseminated through an effective communication strategy, comprehensible and with concrete suggestions in case of natural disasters.

Certain risk information could be misused to plan terrorist attacks or sabotage. Some countries have therefore decided not to make risk maps publicly available. The second phase of risk assessment is risk analysis. This phase can be defined as "*the process of determining the nature and extent of the risks*". The aim of this phase is to prioritise those risks that require more political attention.

The third and final stage of risk assessment is risk assessment itself. In this last phase, the conclusions drawn from the risk analysis are presented to policy makers, with the aim of achieving a level of security that is acceptable both politically and socially.

The Concepts of Corporate Governance, Knowledge Management and Regulatory Compliance

The concepts to keep in mind in CSR are those of corporate governance, knowledge management and regulatory compliance. Corporate governance refers to the set of rules (laws, regulations, etc.) that govern the management and direction of a company or a public or private entity, i.e. the set of principles, mechanisms, rules and relations for the management of a company, and which aim to maximise productivity. It is the procedure through which business decisions are developed and the methods and tools aimed at the company mission are identified.

Corporate governance includes all relations between the company's management, the board of directors and shareholders, defining the objectives, management structure, rules and processes for monitoring the achievement of these goals.

Since 2004, Italy has granted companies the right to use one of three possible governance models: the traditional model, the one-tier model and the dualistic model. The traditional model provides for the presence of a board of directors and a board of statutory auditors, which performs control functions over the administrative work of the board. This is the preferred model in Italy.

The one-tier system provides for a single administrative body that deals with both administration and control, within which a management control committee is created (chosen from among the directors who meet requirements such as integrity, professionalism and independence), while the accounting control is entrusted to an external audit firm. The dualistic model provides for a supervisory board (appointed by the shareholders) which performs the control and appoints a management committee.

At present, public sector governance is undergoing a major transformation aimed at simplifying bureaucracy, in particular as regards digital administration, e-invoicing and the management and preservation of document flows.

Knowledge management is a discipline born in the early Nineties from the meeting of other sciences, such as business organization, sociology, psychology, archiving and information technology.

The company's knowledge management collects all the information concerning the development of a complex and highly technological product, which involves the generation of descriptive, design and organizational information (logistics, sales network, after-sales service, market surveys, legislative constraints, product testing and internal documentation). All this information helps to form the guiding criteria for carrying out the specific activities required and constitutes the company's knowledge, which is the most important tool for improving the efficiency of the various implementation procedures.

Knowledge management generally uses IT tools, with the aim of improving performance, acquiring or maintaining a competitive advantage and facilitating business innovation. A characteristic element of this discipline is precisely the management of knowledge as a strategic asset.

Regulatory compliance means compliance with rules, regulations and standards and is mandatory for banks and financial intermediaries (according to the indications provided by the Bank of Italy, CONSOB and ISVAP), but voluntary for all other types of private and public entities. In particular, banks and financial intermediaries are required to check internal regulations with current legislation in order not to incur sanctions, financial losses or reputational damage.

Rather, corporate compliance requires respect for the ethical ethics of the product sector to which it belongs, also with regard to purely environmental aspects.

The UNI EN ISO 19600:2016 standard is the main reference for the Compliance management system of any body: in Italy, there is the Assocompliance association that qualifies compliance managers on behalf of the Ministry of Development.

As far as the construction sector is concerned, the LEED Protocol is used, which will lead to fast and highly sustainable improvements in the European housing stock.

In CSR, these concepts intersect with other recently widespread concepts, such as prosumer, which now affects the market of any product, affecting the entire production chain, including in terms of sustainable development.

The Concept of *Prosumer*

A prosumer is a consumer who collaborates in the birth of the product he buys. The term derives from the consumer/producer compound, introduced by Toffler A. in his book *The third wave*, published in New York in 1980. In 1972, Marshall McLuhan and Barrington Nevitt had anticipated that the consumer of electrical technology would become a producer himself.

This mixture of roles between producer and consumer was born with the self-help cooperatives, movements that arose during the Great Depression of 1930. Currently, prosumption seems to have become a fundamental feature of Web 2.0., but the term was initially born with reference to hobbyists who in recent years have begun to buy more and more technologically advanced, semi-professional and high quality products: the purchase of such products involves higher expectations and the role of the prosumer is to bring greater customization and technical improvement of the product, based on his suggestions and personal needs. We should notice that access to professional equipment by users is possible thanks to a combination of several factors, such as: the improvement of income and an increase in leisure time for some social classes; the continuous decline in product prices and the growth of dedicated web magazines and online forums.

To increase their profits, companies use interaction with their customers to continuously improve their products, resulting in a globalized mass production process of highly customized products: the prosumer participates in the production process creating business value for free.

In the field of renewable energy, prosumer is the households or organisations that produce excess fuel or energy, which are then fed into a common grid available to other users.

These changes in the role of the consumer have also led to a change in the company's approach to the user, in one aspect in particular: as far as marketing is concerned, even company websites (public or private) tend to be less and less static and much more dynamic, allowing for a much more vivid one-to-one

interaction than in the past which, as a corollary, also has that of creating loyalty, often leading the customer to become the promoter of the company himself.

There are other aspects that should be highlighted: the prosumer is partly reducing the role of the company producer, also because the consumer is developing some self-manufacturing skills, such as 3D printing, thanks to new multimedia technologies. The creation becomes open, independent and non-profit, the culture is directed towards a consumer-to-consumer logic. Moreover, the prosumer is much more aware than the consumer of the past: he knows that he can influence prices and other market conditions, since he knows that the existence of the whole economy is to serve the consumer. That is why companies are much more attentive to consumer demands and therefore devote large portions of their budgets to research and development. Companies take into account the fundamental role of the prosumer, which often also affects the demands for transparency with regard to respect for the environment throughout the production chain.

In conclusion, future trends in ecology seem to be heading towards greater awareness, which seems to be directly proportional to the increase in technology and the demands of certain social classes, attentive to environmental issues. In spite of this, there remain many obscure areas of government administrations, which often fail (or do not want) to stem the widespread eco-reactions, also because of a sedimented capitalist mentality accustomed to little respect for human rights and the principle of healthiness, often bordering on delinquent behaviour, which we have found in all the realities analyzed: often, power lobbies heavily influence many of the political choices.

In this regard, CSR is giving very good results, even if it is still completely voluntary: on the basis of a model like EIONet, a European platform could be activated with mandatory self-disclosure by public and private companies, for example using a technology such as blockchain technology, so that there is an incorruptible register online and open to all and where all the actions (more or less positive) that entities implement to protect the environment and human health can be permanently registered. This could prevent the proliferation of harmful and criminally condemnable attitudes, especially with regard to ecomafia, which would automatically be excluded from the global market.

Of course, EIONet is only the first timid attempt by European public bodies towards maximum transparency and the globalisation of environmental information. It is to be hoped that in the future all this will expand and become a reality, enabling people throughout the world to enjoy their living natural beauty, just as Bolivian thought understands *Naturaleza*, which has recently been granted 11 legal rights. Bolivia formally recognizes Mother Nature as a living being since 2018.

Environment as a Fundamental Human Right

This survey aims to establish whether the right to the environment, and in particular the right to a healthy environment, is a fundamental human right. So far, the reference to this right in terms of fundamental human rights has majorly been indirect and indicated, in the various international treaties, only in relation to other fundamental human rights. To date, the UN has not yet taken a position on this issue, even if it has recently been called for by several voices.

In 1945, the year in which the UN was definitively established, the foundations of post-war international law were laid. But this body did not initially deal with environmental protection, since at that time the principle of sovereignty of States over the land, air and sea areas under their jurisdiction prevailed: for areas outside national jurisdictions, there was freedom to use and exploit the common spaces, without observing any particular behaviour that would not pollute and, therefore, protect the environment.

In the 1960s, a great number of books had appeared denouncing the need to contain world population growth. With the explosion of attention to the environment at the end of the 1960s, the United Nations conferences and the European Community (now the European Union) commissions on environmental issues multiplied: the debates concerned the harmonization of the policies and regulations of the various countries not so much for purely environmental purposes, but rather to avoid distortions of trade competition and to improve an economic system that also took environmental concerns into account.

The first recognition of the right to the environment is contained in Article 45 of the Spanish Constitution of 1978, which states: *“Everyone has the right to enjoy an environment suitable for the development of the person, as well as the duty to preserve it. The public authorities shall ensure the rational*

use of natural resources to protect and improve the quality of life and to defend and restore the environment, based on the indispensable collective solidarity. For those who violate the provisions of the previous section, the law shall establish criminal or, where appropriate, administrative sanctions, as well as the obligation to repair the damage caused". This article is very important, as it is the first to introduce environmental protection into a Constitution, granting the right to every person to be able to use it and, in a mirror image, the obligation to preserve it.

Subsequently, other States imitated the Spanish model.

As we can see, it is simply the recognition of a right indirectly linked to other rights, such as the expression of the personality of each person.

However, such an incisive provision within a Constitution was the first shy sketch of the recognition of the importance of a living space for the achievement of human development. This was possible because of the increased sensitivity developed with the 1972 Stockholm Declaration. Since then, multilateral conferences began to proliferate to solve global environmental problems requiring cross-border cooperation or coordinated efforts by the international community.

The second UN Conference in 1992, held in Rio de Janeiro and entitled *Environment and Development*, helped to build a series of political actions aimed at putting the principle of sustainable development into practice, as indicated in the Bruntland Report.

The central theme of the Conference was climate change: on this occasion, the United Nations Framework Convention on Climate Change was drawn up, signed by 154 nations. The goal, although not binding, became to reduce atmospheric concentrations of greenhouse gases to "prevent dangerous anthropogenic interference with the Earth's climate system". This obligation was mainly addressed to industrialised countries, which had to reduce greenhouse gas values to 5% less than 1990 values by the year 2000: since the signatory countries have very different rates of industrial development, it was established that responsibilities are common, but differentiated, with greater burdens for the more developed countries (being also the biggest polluters), as indicated in Annex I of the UNFCCC.

Since 1994, when the Convention entered into force, the Parties have met annually at the Conference of the Parties (COP) to monitor progress on the UNFCCC agenda and to establish legally binding actions that are increasingly appropriate to the state of the art.

In Rio de Janeiro, the participating countries drew up a very important document, Agenda 21, which sets out 27 principles divided into 40 chapters, in order to organise a comprehensive planning of government actions around the world to achieve the results to which the Parties aspire.

The action programme is divided into 4 areas:

1. social and economic sector, dealing with poverty, health, environment, demographic aspects and production;
2. sector of conservation and management of resources (atmosphere, forests, deserts, mountains, water);
3. sector on strengthening the role of the most significant groups, such as women, young people, the elderly, NGOs, farmers, trade unions, productive sectors and the scientific community;
4. field of means of implementation of the programme, which includes scientific instruments, training, information, international cooperation, partnership, legal and financial instruments.

Agenda 21 coined new and very useful guidelines and concepts which, all together, give indications on how to carry out this great work of saving nature on a global level.

In 2000, it was followed by the Nice Charter (also called the Charter of Fundamental Rights of the Union, CDFUE), which was amended in Strasbourg in 2007. The Charter initially came with free accession, but with its integration into the Treaty of Rome in 2004 and the Lisbon Treaty in 2007, it was recognised as part of the binding law of the European Union. In particular, with Article 37, the Nice Charter assigned the autonomous environmental good dignity of value worthy of protection: "*a high level of environmental protection and the improvement of its quality must be integrated into the policies of the Union and guaranteed in accordance with the principle of sustainable development*".

Since international environmental law is a branch of international law, it is characterised by sharing the same inspiring principles. Among the main principles relating to the environment are the prohibition of cross-border pollution, the precautionary principle and the “*polluter pays*” principle.

Let us briefly recall the sources of international law, which international environmental law shares. They are divided into primary and secondary. At the first level, relating to primary sources, we find the customs, which are valid *erga omnes* and without the need for specific transposition by States, but are immediately binding. We must keep in mind that among the sources of international environmental law, customary norms have played an important historical role in its development, especially in the field of transboundary pollution and in the resolution of certain important disputes by international courts.

The secondary sources of international law are treaties, conventions, protocols and are all binding. They are usually issued by the UN, to which individual states and the European Union may or may not accede.

Primary and secondary sources are also called Hard Law, since they are binding rules. But secondary international rules, in order to be translated into binding law within States, must be transformed into domestic law through the transposition formula.

Conventions and treaties create binding effects only between the contracting parties to the agreement and only when a certain number of States request ratification and transposition.

There is also a defined part of Soft Law, made up of non-binding propositions, but with a high moral value for States: it includes declarations of principle, resolutions, recommendations and world charters. Therefore, Soft Law rules often apply more as a guiding criterion than as a binding rule of conduct.

The birth of the body of international environmental law derives from the signing of a series of treaties on the management of transboundary natural resources, adopted between the 19th and 20th centuries, especially in the field of international waters and accompanied by a number of arbitration proceedings for international cases relating to environmental damage. It was during this period that some founding principles emerged, such as the prohibition of cross-border pollution, inspired by the classic principle of law “*sic tuo utere ut altero non laedas*”. The treaties of that time mainly protected the autonomy of States, without claiming to resolve purely environmental issues.

The most recent (mainly multilateral) treaties create support structures for international cooperation and bureaucratic apparatus (such as the Conference of the Parties) that allow for discussion, exchange of information and monitoring of environmental problems, together with a series of collective “surveillance” procedures for monitoring compliance with obligations. Rather than being aimed at developing contentious procedures for possible non-compliance, most of these treaties focus on eliminating the root causes of environmental problems.

But while the principle of sustainable development has become a cornerstone of modern international environmental law, it is not the same with regard to the right to the environment. In fact, sustainable development forms the basis of all Soft Law legislation relating to international environmental law and especially the basis of the 17 objectives adopted by the United Nations General Assembly in 2015 (the global policy agenda for action by 2030 focuses on key issues such as combating poverty, eradicating hunger and combating climate change).

The Conferences of the Parties (COPs), established annually, according to the prevailing doctrine, function as a collective deliberative body and the points outlined at the conferences do not have a legally binding character, but act as almost-normative production, since they fill the open principles outlined in the environmental treaties with content, prescribing detailed rules that member countries are required to observe in fulfilling their obligations. For this reason, recent multilateral treaties are living instruments, whose principles must be interpreted in the light of the new scientific knowledge.

Finally, international environmental law is also characterised by the particularly prominent role of some non-public actors, such as NGOs, which, although not subject to public international law, play a fundamental role in this area.

Since 2004, the European Court of Human Rights has issued many innovative judgments on the protection of environmental interests, but always in connection with the violation of other rights, such as combating poverty, eradicating hunger and combating climate change.

In 2018, the International Court of Justice (the UN's main judicial body) issued for the first time a judgment condemning cross-border environmental damage following Nicaragua's violation of Costa Rica's territorial sovereignty. In recent years, a number of cases have been brought before international courts and tribunals, which have been called upon to decide disputes of environmental significance, but in conjunction with the violation of other (human or economic) and rights in an incidental way.

Thanks to treaties and international jurisprudence, international environmental law has finally established itself as a new field of independent and systematic investigation.

If sustainable development is at the basis of all recent international environmental legislation, the right to a healthy environment is instead implicitly seen as an indirect human right to health and the expression of one's personality, and therefore it is necessary to establish its place and hierarchical value within the sources of international environmental law, as well as within the classification as a fundamental human right, as it does not yet have a dignity of its own. In fact, the failure to designate the role of this principle affects the possibility of ensuring that it is adequately respected. Moreover, should it be considered an indirectly enforceable right or does it have its own autonomy and value, guaranteed by certain laws, capable of protecting the offended citizen?

The current situation therefore does not allow this right to be considered an autonomous and directly enforceable right.

The first recognition of the link between the environment and human rights took place in 1972 in Stockholm, as Article 1 of the Declaration mentions: *"Man has a fundamental right to freedom, equality and satisfactory living conditions, in an environment that allows him to live in dignity and well-being. He has a solemn duty to protect and improve the environment for the benefit of present and future generations"*.

An explicit reference to the right to a healthy environment can also be found in Article 24 of the United Nations Convention on the Rights of the Child (1989) which, while guaranteeing the right to health, also considers the risks due to pollution.

Article 29 of the United Nations Declaration on the Rights of Indigenous Peoples, on the other hand, unequivocally attributes the right to conserve and protect the environment and the productive capacity of their lands or territories and resources. However, the value of such protection cannot be extended to other territories that do not belong to indigenous peoples. The Inter-American Court of Human Rights has also taken the same approach by guaranteeing the right of indigenous peoples to the integrity of their ancestral land, indicating the environment as an autonomous good, closely linked to the culture, spiritual life, economy and subsistence of indigenous peoples.

The European system, based on the European Convention on Human Rights, has contributed little to the development of environmental protection. The link between the environment and human rights has only been recognised where there is a causal link with the right to life and personal integrity, family or housing.

Incorporating the right to the environment into the human rights system on its own would in itself would be an important achievement. However, this requires an explicit declaration, as requested by Special Rapporteur David Boyd on March 5th, 2019 before the UN Commission on Human Rights, who believes that now is the time for the recognition of an autonomous human right to a healthy environment, with an explicit UN resolution which, although not legally binding, would constitute strong political pressure for all states. Boyd stressed the enormous loss of biodiversity, underlining that *"human beings are causing the sixth mass extinction"* and pointing out that not even the risks linked to pollution are equally distributed, since weaker groups (such as the elderly and children, but also indigenous communities) are more vulnerable to pollution, and arguing that there is no doubt that the right to clean air is a fundamental right of human beings (but also of other species). According to the expert, the UN has left a dangerous gap in this respect. In his report, Boyd recalled the indispensable use of good practices (including a complete ban on the construction of new fossil-fired power plants), which are often intentionally neglected in favour of other predominantly economic interests. In the meantime, even though the UN has not yet taken a position on this issue, many states have legally recognised the right to a healthy environment.

The Conference, previously scheduled to take place in the city of Santiago de Chile in December 2019, was moved to Madrid following a riot by the Chilean people in the run-up to the summit. In 2019, several million citizens took to the streets all over the world to ask governments for strong and immediate responses

to the climate emergency and social injustice that they experience every day, as this crisis risks compromising the future of young people. Mobilisations and protests have paralysed Chile in particular, where the Conference was scheduled, prompting the Chilean government to ask for it to be moved. Thanks to the willingness of the Spanish government, the COP25 was finally held in Madrid, proving to be an important test for a first concrete response by governments to the popular mobilisation and the growing alarm in the scientific world. Charles Michel, President of the European Council, EU representative at the UN Climate Conference COP 25 in Madrid in 2019, together with European Commission President Ursula von der Leyen, argued that healthy development does not conflict with a healthy climate and environment.

The Emissions Gap Report, published by UN-Environment a few days before the start of COP25, highlighted the urgent need to reduce emissions faster over the next ten years to contain global warming within the critical 1.5°C threshold. To achieve this goal, governments (according to the report) must increase their current 2030 commitments by at least five times. In Europe, for example, emissions have fallen by just 0.25% per year over the last five years. The report considers this an ambitious but possible commitment, especially in G20 countries, which are responsible for about 80% of current global emissions.

The most difficult issue that arose at the last Conference of the Parties was the use of the flexible market mechanisms provided for in the Paris Agreement.

It has also emerged that, with regard to the review of the aid system (*Warsaw International Mechanism for Loss and Damage*, WIM), communities in poor countries affected by climate disasters need a clear commitment and the availability of money by 2022 to tackle rapid reconstruction and economic recovery, thus also avoiding the worrying increase in climate refugees. Additional resources need to be made available to activate climate change mitigation and adaptation actions, with priority given to grants over the widespread use of loans. The WIM mechanism deals with the money transfers that the North of the world will have to guarantee to the poorest countries, which had already been promised in Copenhagen in 2009.

However, at COP25 the Gender Action Plan (GAP) was approved, a voluntary programme dedicated to the promotion of women's rights and their representation and participation in climate policy, despite the removal of human rights protection from the draft text approved at the previous COP24 in Katowice. The Madrid conference closed without major agreements, but only a few postponements, due to the great distance between governments, civil society and science. Associations and NGOs have called for respect for human rights to be made binding in many aspects covered by the Paris Agreement. Agreement has also been reached to directly access the Green Climate Fund to obtain the necessary funds for related initiatives.

The rules on the new quota exchange mechanism were postponed to the next session, which will be held from 1 to 12 November 2021 in Glasgow, hoping for the collaboration of the Chinese and US administrations: in 2019, many governments (including Brazil, Australia, Japan and India) severely hampered the negotiations, not being ready to propose new NDCs.

More than 25 experts will attend COP 26 in 2021, assisting the Presidency. The President of COP26 and UK Minister for Business, Energy and Industrial Strategy, Alok Sharma, said: "*Although we are focused on fighting the coronavirus crisis, we must not lose sight of the great challenge of climate change. Now that we have set the new COP26 dates we can work with our international partners on the ambitious global climate action roadmap from now until November 2021. The steps we are taking to rebuild our economies will have a profound impact on the sustainability, resilience and well-being of our future societies and COP26 can be an opportunity for the world to unite in the name of a clean and resilient recovery*". UNFCCC Executive Secretary Patricia Espinosa added that efforts to tackle climate change and Covid 19 are not mutually exclusive.

But, wanting to explore the difference between sustainable development and the right to the environment, it is clear that the first concept is only a smokescreen to justify a capitalist economic development (to which we are so accustomed) compatible with the available natural resources.

The right to the environment, on the other hand, goes beyond a capitalist connotation and is characterized as an absolute right in itself and, therefore, must be recognised autonomously, freeing it from other parameters such as environmental justice, the right to work, the right to health, the right to a dignified life and anything else that can cloud its meaning in its purest sense; and not only in respect for the expression

of the human personality, but in recognition of a true respect for biodiversity (whose balance allows humanity to survive).

This is only the meaning of “*right to the environment*”, the right of the environment itself and of all living beings, a balance between man and other species that allows life on this planet. Balance that has nothing to do with the balance between economic development and natural resources valued in lucrative terms.

As long as the two aspects (sustainable development and the right to the environment) tend to be confused, it will never be possible to understand the absolute value of the right in question. In fact, we are talking about the planetary consumption of resources in economic terms and “*time to regenerate nature*”, chronically neglecting the aspect related to the balance that man, until now, has been able to enjoy thanks to what surrounds him.

We continuously consider the number of living specimens of a certain species, or we treat the environment as a sector to which partial corrections can be applied in order, for example, to limit poverty in the world, even going so far as to speak of the issue in terms of “*ecological crisis*”, as if it were an economic paradigm to be improved with temporary solutions that are completely disrespectful and devoid of considerations relating to the balance of nature itself.

Beyond the fact that the right to the environment does not only have to do with the human species, but rather concerns all living species, animals and plants, the classification of the right to the environment cannot be assimilated to other human rights such as those against genocide or torture, or the rights of children (as they all concern human actions against other human beings, or social situations that lead to distortions of the paradigms of cohabitation and violence, of the same human origin). Therefore, the right to a healthy environment would rather take the form of an absolute right of all forms of life to coexist in a balanced space. Consequently, the right to the environment is, firstly, an absolute right of nature and, only secondly, an absolute right of the human species in the context in which it lives. In terms of fundamental rights, we can say it is a right to the *ecosystem*, and not only to the environment.

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