POOL AMBIENTE REPORT 2024

Rewriting priorities for the protection of the environment and our health

Pool Ambiente

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Letter from the President of Pool Ambiente

Dear readers,

We are delighted to present Pool Ambiente's first report. The report has gathered valuable contributions from associations, institutions and professionals. The purpose of this study is to assess how environmental risks are managed in our country and to highlight the role of the insurance sector in supporting the green transition of businesses while protecting the environment and public health.

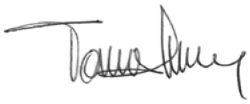
The report's findings suggest that environmental liability risk management in Italy is still a long way from reaching an optimal level of diffusion and application. National legislation is constantly evolving and Italian companies and organisations increasingly need to adopt suitable instruments and methods for managing this type of risk.

The report concludes by making recommendations to improve the management of environmental liability risks, covering both regulatory and technical aspects.

Environmental liability is a complex and growing risk that requires an integrated approach by Italian companies and organisations. The report underlines the importance of the insurance industry's role in promoting instruments to protect the environment and people's health. It shows that the risks of environmental damage are often underestimated and that insurance cover for such damage is very low. This is a serious problem that requires the attention of all parties involved, including political intervention to prioritise two critical aspects: to prevent environmental damage, as prevention is and must be fundamental, and ensuring prompt remediation in the event of damage.

We hope you will enjoy reading this document and that it will encourage the use of these tools and help raise awareness on the environmental risks associated with human activities.

Sit back and enjoy reading



President of Pool Ambiente

Abstract

This is the first report prepared by Pool Ambiente, a co-insurance consortium active in Italy since 1979 that provides environmental liability insurance cover.

The aim of this report is to assess the management of environmental liability risks and the extent of insurance coverage for environmental damage in Italy.

The report has benefited from the contribution of key organisations and bodies that have shared their views, data and experience on the subject of environmental risks and damage.

The lack of legislation to prevent environmental damage and the very low percentage of companies with an environmental liability policy (0.45%) have serious consequences for our country's natural resources. These resources are under constant threat of contamination, degradation and destruction, with no guarantee that they can be restored. In Italy, the EU's 'Polluter pays' principle is often applied only on paper, as those responsible for environmental damage frequently declare bankruptcy or fail to fulfil their clean-up and restoration obligations.

This report also discusses some concrete solutions developed by Pool Ambiente, such as the UNI 107:2021 Reference Practice 'Protected Environment', which ensures effective prevention of environmental damage and the dedicated insurance coverage for such damage.

The report also suggests additional measures that institutions should consider implementing to better protect natural resources and public health.

1. POOL AMBIENTE AND ITS COMMITMENT TO A MORE PROTECTED ENVIRONMENT

The history of Pool Ambiente is that of a consortium that has evolved over time with a mission to protect the environment and human health from the consequences of environmental damage since its foundation in 1979.

Pool Ambiente is the Italian co-insurance consortium for environmental risks. It brings together the main insurance companies operating in Italy and leading reinsurers from around the world. The consortium was set up on the initiative of ANIA and Confindustria. Its founding principles are:

- Mutuality, i.e. the sharing of risks, including potential catastrophic losses such as environmental damage, among several insurance and reinsurance market players. Thanks to risk sharing, in which each member has a share, Pool Ambiente is able to offer a particularly high maximum coverage (in 2024 the consortium's limit for each policy issued was €62 million).
- Contribute to the protection of the environment, natural resources, the climate and people's heath through a range of actions:
  - Providing incentives and support for companies to improve their environmental liability risk management and prevent damage more effectively;
  - Ensuring that when environmental damage does occur, it is remedied through insurance coverage, while protecting the company's assets and safeguarding its survival. The policies offered by members of Pool Ambiente have evolved over time in line with environmental legislation to cover all obligations.
- Raising awareness among the media, companies and institutions about the importance of effective environmental liability risk management through various types of initiatives such as communication campaigns, webinars, courses and conferences.

1.1 Environmental protection in the Italian Constitution and in the UN Resolution

The environment is a common asset that is essential to the life of man and all living things. Its protection is therefore a fundamental right that is recognised both nationally and internationally.

Our Constitution was recently amended to include the protection of the environment and human health among its fundamental principles. In particular, Article 9 of the Constitution was amended to include the protection of the environment, biodiversity and ecosystems, also as fundamental objectives of the Republic in the interest of future generations. Article 41, on the other hand, was amended to include environmental protection as one of the fundamental principles governing private economic initiative.

These changes represent a major step forward and are in line with both European and international legislation on environmental protection.

On 28 July 2022, the United Nations General Assembly also adopted Resolution 76/300[1], which recognises the human right to a clean, healthy and sustainable environment. The resolution defines a healthy environment as 'an environment that enables all human beings to live in dignity and to enjoy their human rights'.

Pollution, climate change and other environmental degradation affect the enjoyment of this right. The European Union is also implementing several strategies to ensure the protection of the environment, water and soil. The main initiatives include:

- Directive on the protection of the environment through criminal law: a directive aimed at ensuring a high level of protection and improvement of the quality of the environment;
- EU Soil Strategy 2030: a strategy proposing a combination of voluntary and legislative measures to protect soil to be implemented by 2030, including the proposed Soil Monitoring and Resilience Directive, with a view to having all soil ecosystems in a healthy condition by 2050;
- Sustainable management of water resources: measures to ensure sustainable management of water resources and the overall protection of ecosystems associated with all types of water bodies.

These legislative measures are an important step forward for environmental protection, but there is still a long way to go to ensure that everyone can live in a healthy environment**. This can only be achieved if environmental risk management becomes a priority for the European Union.**

1 A_76_L.75-EN.pdf

1.2 The "Polluter pays" principle and the role of the insurance industry

The 'Polluter Pays' principle is one of the fundamental concepts underpinning the European Union's environmental policy. According to this principle, those responsible for causing pollution should bear the costs of that pollution, including the costs of measures to contain, reduce and clean up the pollution as well as the damage caused to society. The application of this principle means that polluters are held responsible for the pollution they cause and therefore have an incentive to prevent environmental damage. It also prevents companies from competing unfairly with virtuous companies by passing on the costs of risk management and prevention to society.

This principle has been applied through regulations, fines, taxes and other measures, including pollutant emission quotas and the Environmental Liability Directive. This means that the polluter, usually a company or an organisation, is legally responsible for all the costs associated with the pollution it has caused.

Although it is a fundamental principle of EU environmental policy, its implementation can be complex and challenging:

- Identification of the responsible party - in many cases, especially where pollution is diffuse, from multiple sources or has a historical context; it may be difficult to clearly identify who is responsible for the pollution.
- Ability to pay - the polluter may not be in a position to pay the costs of clean-up or compensation, especially if they are uninsured.
- Legal procedures - legal procedures to enforce the principle can be lengthy and costly.
- Inconsistent application - the European Court of Auditors has found that EU Member States do not apply the 'Polluter Pays' principle consistently and comprehensively across their various environmental policies.

The principle is also based on the observation that the cost of preventing damage is usually hundreds of times less than the cost of any damage that might be caused. However, it also requires companies to think and act virtuously; if they are forced to pay for the pollution they cause, they should have an incentive to prevent it at a much lower cost – something that unfortunately, does not always happen. So much so, in fact that part of the EU budget is used to finance clean-up operations, which, according to the 'polluter pays' principle, should be borne by those responsible for the pollution. Italy, for example has allocated €500 million for the remediation of 271 orphan sites in 2021 under the M2C4 measure.

At the European level, there is a clear commitment to apply this important principle in a more concrete way, and even the proposal for a directive on soil monitoring and resilience aims to amend Directive 2004/35/EC in order to make its application more effective.

The insurance sector has a crucial role to play in this respect, which has so far been underestimated and undervalued.

Indeed, spreading insurance culture and insurance cover for environmental damage would make it possible to:

- Help companies assess their environmental liability risks and identify potential liabilities through insurance advice;
- Encourage virtuous behaviour in terms of risk management, prevention of environmental damage and in general compliance with current legislation. In fact, certain types of mismanagement can be excluded or mitigated, and ameliorative conditions can be envisaged if risk-reducing measures are implemented;
- Improve environmental liability risk management: insurance companies regularly inspect insured sites using specialised technicians. In the case of Pool Ambiente members, companies also receive free advice in the form of a report containing an assessment rating of the risks identified and the recommended mitigation measures for more effective prevention of environmental damage;
- Assist the company in the event of environmental damage: members of Pool Ambiente provide experienced professionals to assist the company at all stages of the clean-up / remediation process with a service that can also be completely 'turnkey'. This assures the authorities and the public that, in the event of environmental damage, obligations will be met and that the damage to natural resources will be restored.

As we will see in more detail in the chapter on Policies, the important role played by the insurance sector today is very limited and these benefits concern only a very small percentage of all companies, in Italy as in most European countries. With the exception of Germany and Austria, the spread of insurance coverage for environmental damage is extremely limited.

With this report, we therefore also hope that the institutions will become more aware that the insurance sector is an important partner to have on board when it comes to defining strategies and identifying measures to protect the environment, rather than as an actor to be kept on the sidelines, as is the case today.

1.3 Not to make a mountain out of a molehill: priorities in environmental protection

If we were stranded on a desert island with only one source of water, what would we have to do to survive for as long as possible? Getting our priorities right could be crucial.

What would be our priority between rationing water consumption and protecting it from external threats? We ask this question in all our courses, and the answer is unanimous: first, we should worry about protecting the water from contaminants and then, once it is safe, we can focus our efforts on making it last as long as possible.

If we were a company instead of being a castaway on a desert island, what would our priorities be in terms of protecting, for example, the water table beneath us? Optimising water consumption or effectively preventing potential environmental damage such as groundwater contamination? By this reasoning, there should be no doubt about the priorities in environmental protection, both for businesses and for institutions and consumers.

However, this is not the case, and today the commitment to environmental damage prevention and environmental liability risk management in general, which should be a priority, are issues that are often neglected, underestimated and for which there seems to be a lack of awareness and real commitment. The almost total absence of regulations to encourage prevention is one of the causes of this problem, as is the choice of Italian and European legislators to adopt a more punitive approach, once the damage has been done, rather than a preventive one.

As regards the companies most committed to the green agenda, the fact that risk management is a complex issue to communicate, and requires an audience capable of understanding it has probably deterred many from highlighting any commitment in this area in their environmental communications.

> "As a result, the issue of protecting our natural resources, which should logically be a priority, has been conspicuous by its absence."

Look for it on the websites and in the advertising campaigns of the companies most committed to ESG, in sustainability reports, in articles about the environment and sustainability, in national, European and probably international environmental policies, look for it on social networks, in the campaigns of environmental associations. You will find very little.

Let us return to our desert island for a moment. Unfortunately, we have become distracted, or perhaps we have simply misplaced our priorities in protecting our only water resource, and we notice that the water is murky and no longer fit to drink. What should our priorities be at this point? Should we ration our consumption or purify it so that it is drinkable again?

Again, the answer is fairly obvious; you cannot ration consumption if there is nothing to drink. But how many companies actually equip themselves to be technically and economically ready to restore the environment they have inadvertently damaged?

Less than one in a hundred, as we shall see in the chapter on Policies.

The aim of this report is to draw attention to the need to set the right priorities for real environmental protection and to propose possible solutions for the benefit of all stakeholders, *first and foremost citizens*.

The Sustainability Tree is a graphical representation of environmental priorities for building a comprehensive policy to protect natural resources and the climate. Like any other tree, it is made up of roots, a trunk, branches, leaves and fruit.

ROOTS – PREVENTION OF ENVIRONMENTAL DAMAGE

Roots are fundamental to a tree, anchoring it to the ground and allowing it to grow. In our model, they represent the commitment to prevent environmental damage, which is equally fundamental and a priority for environmental protection.

For a company, prevention means identifying and properly managing all potential sources of contamination and general damage to natural resources. This very important aspect is often underestimated, if not completely ignored, by the consumer. There are few legal obligations regarding inspection and maintenance and they only apply to companies in certain sectors; for example, there are no obligations for the maintenance of underground tanks, even if they are very old and contain dangerous substances. It is therefore up to the company to decide whether to do something, little or nothing to effectively prevent environmental damage.

The roots of the tree therefore translate into effective environmental risk management, i.e. risk management applied to environmental liability risks. The main steps in this process include:

- Mapping potential sources of environmental damage and identifying damage scenarios that could occur;
- Eliminating avoidable risks and, where appropriate, reducing residual risks;
- Implementing all measures that can effectively reduce the probability of occurrence and the severity of the consequences in the event of damage.

TRUNK – COMMITMENT TO REMEDIATION IN THE EVENT OF DAMAGE

The trunk, on the other hand, represents the commitment remediate environmental damage. Italian law requires a company to restore damaged natural resources, but if the soil and a nearby river are polluted and the company responsible does not have the necessary funds and goes bankrupt, the cost falls on the community.

Commitment to remediation therefore means equipping oneself with tools that give consumers, fellow citizens, the authorities and all stakeholders the guarantee that, in the event of a 'problem', all the necessary resources will be available for emergency measures, clean-up, reme-

diation and possible compensation to third parties. This commitment could, for example, take the form of a dedicated fund or a specific environmental liability insurance policy.

No one has ever asked companies what they are doing about it, and it is time to start asking.

BRANCHES AND LEAVES – IMPROVING ENVIRONMENTAL PERFORMANCE

Branches and leaves can only grow if the roots and trunk are solid and functional.

In the same way, the branches and leaves of the environmental sustainability tree, which represent all the initiatives that the company has undertaken to improve its environmental performance, can only 'hold on' if there is adequate risk management (the roots) and damage management capacity (the trunk). Using the example of the castaway on a desert island, the branches and leaves represent water rationing: useful and necessary once water has been saved for rationing. This is important to make natural resources last as long as possible, to avoid overexploitation and to measure and improve various aspects such as reduction of emissions, consumption, amount of waste produced, circularity of raw materials/by-products/waste, reduction of use of hazardous substances.

FRUIT – GREEN PRODUCTS/SERVICES

The icing on the cake, and the last in order of priority in terms of environmental commitment, is the fruit of the tree, i.e. the products and services offered by the company, which are undoubtedly important and must be consistent with everything 'underneath'. This commitment translates into products/services that have the least environmental impact on the planet, taking into account various aspects such as the raw materials used, the durability of the product, the possibility of repairing and reusing the product, the impact of the product during its use and at the end of its life when it becomes waste.

PRIORITIES IN ENVIRONMENTAL PROTECTION

Historically, the issue of preventing environmental damage has received little attention. Major accidents, like the one in Seveso, raise the focus of attention for a while, but in the last decade, as the issue of environmental sustainability has become more central, other issues have cap-

tured the attention and the focus of public opinion. The fact that these are technical issues and more difficult to communicate, should not be a reason not to talk about them.

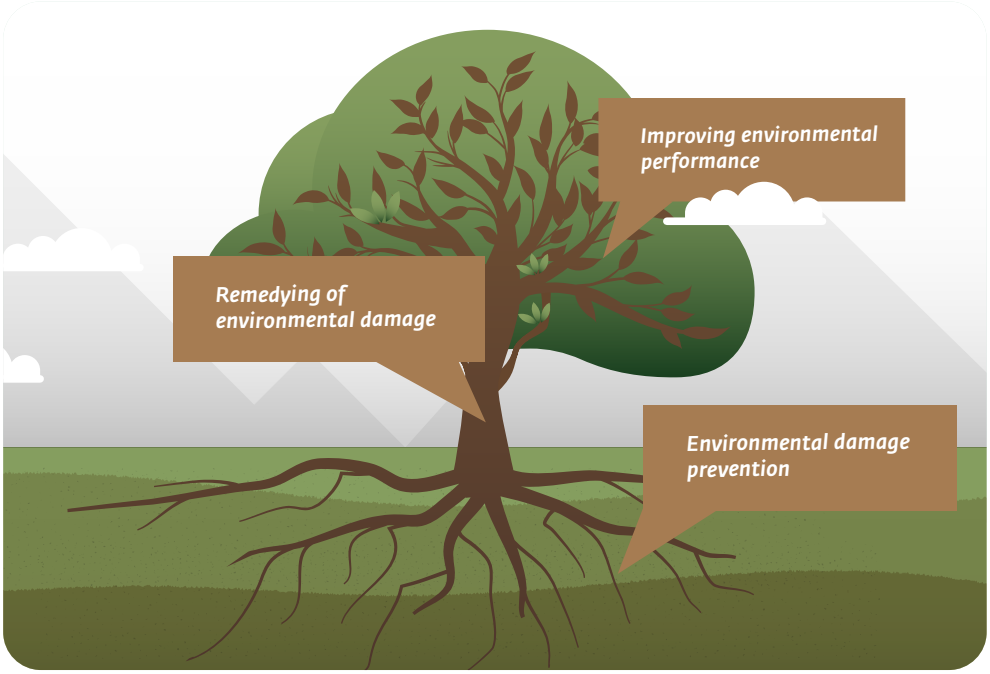
If an aquifer is contaminated and a natural resource in general is damaged, it will take many years before it can be fully 'repaired' and returned to its pre-contamination state, and if the contamination is very severe it may not be possible at all. Those who live in contaminated areas know that this can also have a very serious impact on their quality of life and health.

Climate change is also making matters worse, both by making our natural resources more precious and vulnerable, and by increasing the frequency and severity of extreme weather events. It is important that environmental loss prevention takes account these extreme natural events that can affect businesses, both in terms of damage to the business itself and as a source of environmental pollution.

Today, the term 'sustainability[2]' is widely used - not to say abused - in many communications, but it is also a kind of large basket into which many bright and colourful ideas are placed that attract the consumer, but how useful are they really for protecting the environment?

As we have tried to illustrate with the example of the tree, or the bottle of water on the desert island, not all actions that fall under this concept have the same impact and importance.

2 The term 'environmental sustainability' officially appeared in its most widely accepted meaning in the 1987 Bruntland Report to the United Nations World Commission on Environment and Development. In relation to business, it can be defined as the ability to produce goods and services without compromising the natural environment and to preserve it for future generations.



"It is therefore important to prioritise the myriad of possible actions aimed at protecting the environmental and ensuring business sustainability."

Priorities for protecting the environment, climate and human health:

- Managing risks to avoid accidents that could damage natural resources;
- Having the economic and technological resources to repair any damage caused;
- Improving environmental performance and reducing the environmental impact of the company's various activities and products/services.

1.4 Tools available to companies to protect the environment, climate and human health

As we have seen, of the many issues that need to be developed to achieve greater environmental sustainability, there are two areas where efforts and attention need to be prioritised:

- the prevention of environmental damage;
- the capacity (primarily economic) to support any remedial action in the event of damage.

The main tool available to companies to implement measures in these two areas is risk management, i.e. the process of identifying, assessing and controlling financial, legal, strategic and safety risks to an organisation's capital and earnings. It is a system of people, processes and technologies that enables an organisation to set objectives in line with values and risks. The most important steps in the risk management process are:

- risk identification: identifying environmental damage scenarios, potential sources and possible causes;
- analysing and evaluating risks, their likelihood of occurrence and possible consequences, and classifying them according to their importance and magnitude;
- risk mitigation and monitoring, i.e. identifying (and implementing) measures to reduce the likelihood and/or magnitude of identified risks; in the case of environmental liability risks, these measures may include plant modifications and control systems, but also staff training, the adoption of corporate policies and maintenance procedures;
- emergency management: emergency management is part of the risk management process, because good risk management also means being able to deal with the possible consequences of that risk, both inside and outside the facility. The preparation of emergency plans and the provision of resources to deal with emergencies is a fundamental aspect of this.

For companies committed to environmental sustainability, this is even more important. In addition to risk mitigation, the ability to restore natural resources in the event of damage to the environment is becoming a strategic issue, so that the resources are restored as required by law. Such interventions can be very costly and can place the company in serious difficulty, with the costs being passed on to society.

This ability to deal with emergencies and to provide for environmental remediation can be achieved through two main instruments: a fund set up by the company or taking out environmental liability insurance. In the following chapters, we will look in more detail at these basic tools for protecting the company, the environment and people's health.

ARTICLE

The Culture of Environmental Risk Management for Sustainable Development – by Massimo Michaud, CINEAS President

Recent trends in environmental legislation, both nationally and internationally, show that the prevention of environmental risks is an increasingly important aspect of corporate management. The latest data published by the World Economic Forum's Global Risk Report 2023 shows that environmental degradation is considered one of the greatest global risks to the economy and society, with significant implications for human health, economic prosperity and the planet's ecological balance. In this context, **Cineas, the consortium founded in 1987 by the Politecnico di Milano to disseminate the culture of risk**, acts as a reference point in the field of professional training and awareness-raising on environmental risks, both through professional training activities and through studies and research.

According to the 10th edition of the research entitled ***Observatory on the Diffusion of Risk Management in Medium-Sized Enterprises in Italy***, carried out annually by Cineas and in 2023 in collaboration with IPSOS, more than 30% of the companies surveyed do not have specific procedures for risk management. The Observatory found that effective risk management is linked to higher business productivity and growth. A commitment to risk prevention and mitigation, including environmental risks, also leads to organisational improvement by increasing the ability to adapt to changing market conditions.

Corporate governance must pay particular attention to **'existential' risks**, which include environmental risks that can threaten the very existence of companies and the communities in which they operate. Analysing and proactively managing these risks is critical to the future sustainability of the business and contributes to the company's commitment to sustainability.

The management of **ESG** *(Environmental, Social and Governance)* risks is also becoming increasingly important to companies and their very existence. Failure to meet the ESG objectives of sustainable development can lead to an increase in global political tensions and a further exacerbation of climate risk, as noted in the Cineas Observatory data, and can complicate the overall picture of global risks perceived by companies, with significant repercussions on the global political situation (for 60.7% of companies surveyed) and a worsening of climate conditions (49.4%). Instead, companies that integrate ESG into their strategy enjoy tangible benefits, such as attracting investors and reducing exposure to operational, legal and reputational risks. In addition, the failure of companies to adapt to ESG objectives can further exacerbate climate risks.

Addressing these challenges requires a system for identifying potential and emerging risks that enables businesses to respond in a timely manner and prevent or limit damage.

A joint effort between the public and private sectors is also essential to mitigate the financial impact of natural disasters and promote the country's resilience. Meeting this challenge will require joint effort and commitment, but it is crucial to ensure adequate protection for citizens in the face of the increasingly frequent natural disasters resulting from the climate crisis, as outlined in the ***Cineas White Paper 'Insurance for Natural Disasters and Pandemics'***. The study, carried out by the consortium with the help of experts in the field, aims to help policymakers evaluate public intervention models that can provide a socially and economically sustainable solution to the management of natural disasters caused by climate change.

In terms of contributing to the dissemination of specialised professional skills and knowledge, Cineas has been actively collaborating with **Pool Ambiente** for more than fifteen years, organising in partnership the highly specialised training programme in ***Environmental Risk Management for the Sustainable Development of Companies*** which covers topics such as techniques and methods for limiting environmental risks in the context of a company's sustainable development strategy and the management of environmental claims. In addition, the course offers up-to-date insights into topics such as the European and Italian regulatory framework, risk scenario assessment and the definition of concrete and effective environmental policies. Lastly, there will be specific in-depth studies on criminal liability for environmental damage and on corporate best practices.

The fruitful experience with the Pool, and the growing importance of this area of risk, led the Consortium to dedicate a specific **training area to Climate and Environmental Risk** among the **7** on which it has focused its highly specialised professional training efforts, namely: **Risk Governance, Risk Engineering, Claims Management, Risk in Healthcare, Intelligence and Cyber Protection and Infrastructure Risk.**

The macro area dedicated to Climate and Environmental Risk includes, in addition to the Master's degree organised with the Pool, several specialised courses, including, from 2022, the Executive Course in **Agririsk Management** - organised in collaboration with Asnacodi - thereby involving another crucial sector for the promotion of sustainability, the agricultural sector and related supply chains.

In conclusion, **risk culture** in our country has much room for improvement; in particular, environmental risk management will be an essential pillar for the sustainable future of businesses and the protection of people, goods and resources. In the long term, therefore, the collaboration between Cineas and the Pool Ambiente will be able to make an even greater contribution to raising

awareness of the responsible and conscious management of environmental risks, while remaining up-to-date and enriched with initiatives that are useful in the country's evolving socio-economic context.

Massimo Michaud

CINEAS President

2. BUSINESSES AND ENVIRONMENTAL RISK MANAGEMENT

2.1 The risks of environmental damage

Environmental liability risks are inherent in any human activity and can have economic, legal and reputational consequences for companies and operators, as well as damaging the health and well-being of people and the conservation of ecosystems.

Environmental liability is regulated at EU level by Directive 2004/35/EC, which establishes the 'polluter pays' principle and requires businesses to limit and remediate the environmental damage they cause. The directive covers three categories of environmental damage[3]:

1. Damage to biodiversity, which includes species and habitats protected by EU legislation;
2. Damage to water, which includes surface water, groundwater and sea water;
3. Damage to the soil, which compromises its ecological functions.

The directive provides for two types of liability for operators:

- strict liability, which applies to the hazardous activities listed in Annex III of the Directive, such as industrial activities, waste management activities, geological storage of CO2 and offshore hydrocarbon extraction activities. In this case, operators are liable for any damage to the environment regardless of their fault or negligence;
- fault-based liability, which applies to non-hazardous activities that cause damage to biodiversity. In this case, operators are liable only if they have acted with fault or negligence.

To establish environmental liability under this standard, it is necessary to prove the causal link between the operator's activity and the environmental damage, taking into account possible natural or third party causes and the nature of the activity. It is also necessary to assess the extent and nature of the environmental damage caused by measuring the negative change or degradation of natural resources or the services they provide.

The occurrence of environmental damage, i.e. the deterioration of a natural resource or of the utility provided by it, then triggers obligations for the responsible party to clean up and remediate the damage.

In Italy, the *body of* legislation on environmental damage is contained in Legislative Decree 152/06 as amended. Part Six transposes the above-mentioned European Directive 2004/35/EC, while Part Four, Title V, regulates the remediation of polluted sites, i.e. sites where the quality of the environmental matrices, soil and/

3 Italian Legislative Decree 152/06, art. 300(2)

or groundwater has been altered by the introduction of contaminants. The coexistence of these two regulations, which are different in terms of age, origin and conception is, not easy, and several aspects still remain to be clarified[4].

For soil and groundwater matrices, remediation legislation provides pre-defined reference concentration levels (tables) for the most common chemical compounds, above which the site is considered *potentially* contaminated[5] and concentration levels have to be calculated based on the specific characteristics of each site[6], above which the site is considered contaminated and remediation is required, regardless of the fault or strict liability of the responsible party and the type of activity that caused it. For compounds that are not specifically mentioned, the regulations require that the concentration values of the most toxicologically related compound[7] be used.

A classic example is the leakage of hydrocarbon substances from an underground tank, which spread and affected the quality of the unsaturated subsoil and groundwater beyond acceptable limits.

The remedial measures required consist of:

- **Safety Measures,** i.e. interventions aimed at preventing the spread of contaminants (also called preventive measures in the legislation);
- **Remediation Interventions,** i.e. all actions aimed at eliminating the source of contamination and reducing the concentrations of pollutants in the environmental matrices below acceptable levels, or in any case, permanently isolating them from the environmental matrices themselves.

However, environmental damage, does not necessarily involve the introduction of pollutants into the environmental matrices, but can also be caused by actions that degrade natural resources in various ways, for example:

- Deterioration of protected species and natural habitats due to the direct effects of fire;
- Release of water from a river barrier or a spring in quantities less than the vital minimum required by downstream ecosystems;

4 For example, see "Metodologie e criteri di riferimento per la valutazione del danno ambientale ex Parte Sesta del D.lgs 152/2006", Linee guida SNPA n. 33/2021 e R. Leonardi "A ciascuno il suo: le Sezioni Unite della Corte di Cassazione intervengono sulla portata del principio del "chi inquina paga" e sul sistema distributivo delle responsabilità ambientali (nota a Cass., S.U., 1 February 2023, n. 3077)", giustiziainsieme.it, 2023

5 CTC – Contamination Threshold Concentration

6 RTC – Risk Threshold Concentration They are determined using a technical-scientific method called Health and Environmental Risk Analysis, which takes into account site-specific environmental characteristics (lithology, depth of aquifer, extent of contamination, prevailing winds, etc.) and site use (workers vs. residents, indoor vs. outdoor, extent of cracking in paving, if any, etc.)

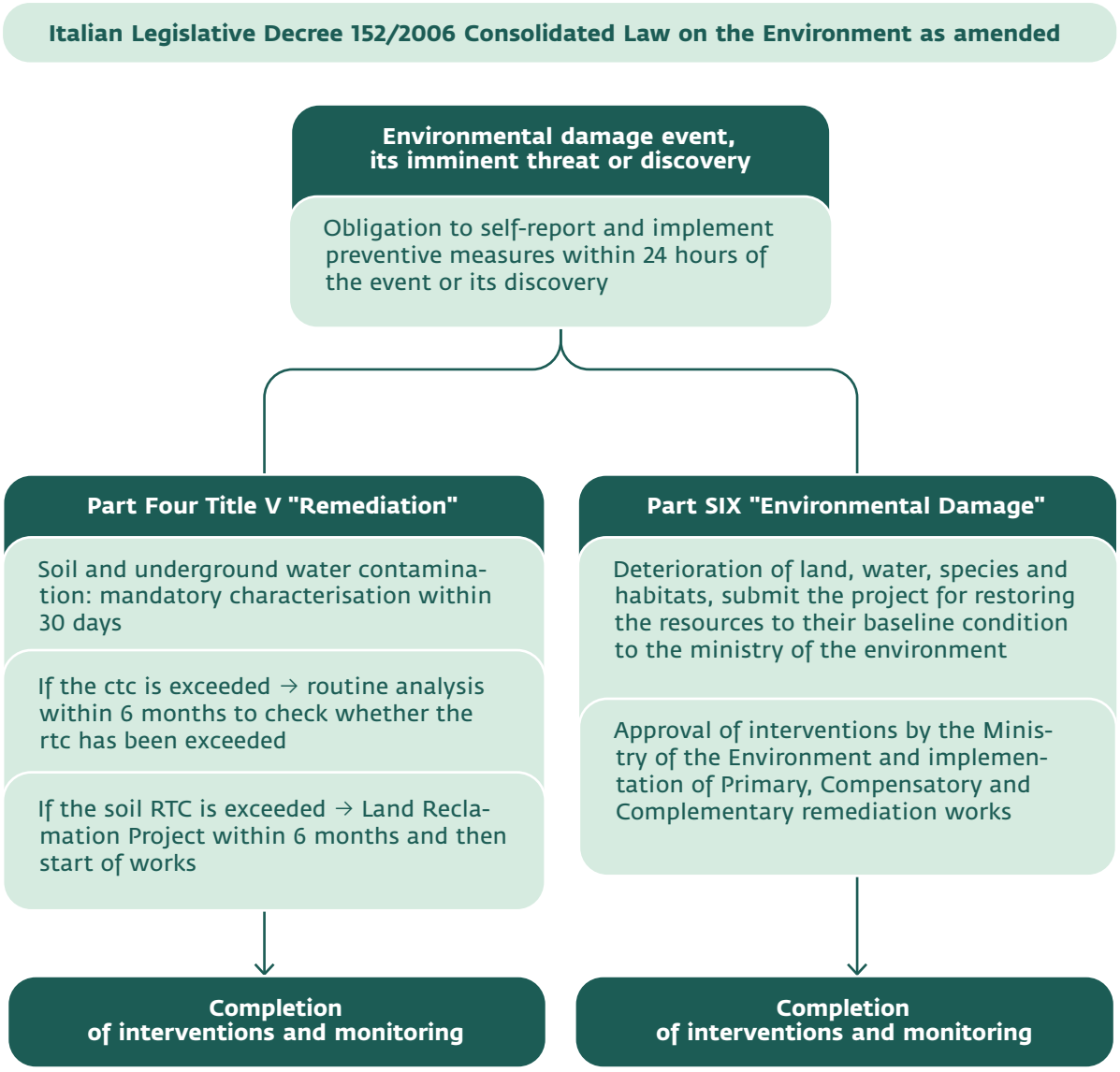
7 Legislative Decree 152/06 in Note 1 to Tab 1 All5, Part IV Title V states verbatim: 'For each chemical category, the table shows some of the substances frequently found in contaminated sites. For substances not explicitly listed in the table, the acceptable concentration limits are derived by applying the limits for the toxicologically most closely related substance

- Excessive withdrawal of water from a surface water body, or intercepting its sources, with a consequent impact on the ecosystem of the water body;
- Communication between water bodies with different chemical and physical characteristics;
- Introduction of alien (non-native, i.e. non-local) species;
- Uncontrolled release of sediment during reservoir cleaning operations;
- Noise or light disturbance: consider, for example, the disturbance to nesting or resting sites of a protected migratory species caused by the passage of vehicles on a new road or by a new production facility;
- Discharging water at unsuitable temperatures: for example, discharging water that is too hot can lead to an uncontrolled growth of algae, followed by decomposition processes and a reduction in the oxygen content of the water body;
- Alteration of the sediment balance (e.g. reefs, jetties and groynes along the coastline);
- Direct mechanical damage to protected species (e.g. for laying submarine cables);
- Dredging the seabed and altering a riverbed.

In the event of environmental damage, there are three types of Remediation:

- **"Primary" remediation -** any remedial measure which returns the damaged natural resources and/or impaired services to, or towards, baseline condition;
- **"Complementary" remediation -** any remedial measure taken in relation to natural resources and/or services to compensate for the fact that primary remediation does not result in fully restoring the damaged natural resources and/or services;
- **"Compensatory" remediation** - any action taken to compensate for interim losses of natural resources and/or services that occur from the date of damage occurring until primary remediation has achieved its full effect.Schema 2.1 Principali riferimenti di legge in caso di evento di danno all'ambiente (Fonte Pool Ambiente). Main legal references regarding environmental impact events (Source: Pool Ambiente)

Diagram 2.1 Main legal references regarding environmental impact events (Source: Pool Ambiente)



ARTICLE

Environmental liability and civil law – insuring against it – by Italo Partenza, lawyer, founder of ITC Law

The issue of environmental liability and the nature of remediation obligations pursuant to Legislative Decree No. 152/2006, which is fully inspired by EC Directive 35/2004, has been the subject of much academic debate and case law.

In this respect, it should be noted that all the compensatory interventions provided for by Article 7 of the above-mentioned Directive[8] correspond, de facto, to a specific form of compensation that is regulated by Article 2058 of the Civil Code[9].

One of the principles to be taken into account in the definition of the Community-derived system of civil liability for environmental damage is the 'polluter pays' principle, which therefore implies the definition of a criterion of imputability and causality[10].

This approach clearly follows from the judgement of the Court of Justice, according to which, site contamination is a hypothesis of environmental damage that can be remedied by a system of civil liability, which therefore requires the establishment of a causal link between the polluter's activity and the damage[11].

However, the need to ascertain the existence of a causal link does not exclude the possibility that in some cases, such as site contamination, a civil liability system may provide for strict liability hypotheses: in the case of damage resulting from activities listed in Annex III of Directive 35/2004/EC, the obligation to make good does not depend on determining fault or negligence, but must be applied alternatively to all subjects carrying out different activities.

It goes without saying that, even in the case of strict liability, the impossibility of establishing a causal link excludes any obligation to make good the damage.

8 Article 7 of Directive 2004/35/EC, establishes 3 different criteria for determining the remedial measures:

• primary remediation, whereby an attempt is made to return the damaged resources and services to their baseline condition;

• if, in spite of this, the damaged resources and services do not return to their baseline condition, then 'complementary remediation' will be undertaken whereby an attempt is made to provide a similar level of resources and services, including, as appropriate, at an alternative site, as would have been provided if the damaged site had been returned to its baseline condition;

• Compensatory' remediation is any action taken to compensate for interim losses of natural resources and services that are disrupted by the damage until primary remediation has achieved its full effect.

9 Article 2058 of the Italian Civil Code states: "The injured party may demand specific redress when this is possible in whole or part. However, the court may order that the redress be made only by providing an equivalent, if the specific redress would prove to be excessively onerous for the debtor.

10 Indeed, to say that the system of environmental liability is governed by the 'polluter pays' principle also means, by definition, that those who do not pollute, do not pay.

11 Court of Justice EU 9.3.2010 – C-378/08 and C-379/08, in Riv. It. Diritto pubblico comunitario, 2010, 1591, with note by Bartolini; EU Court of Justice 4.3.2015 – C-534/2013.

In addition to the '*polluter pays*' principle, there are other principles that contribute to the protection of the '*environment*'. The most important of these is the '*precautionary*' principle is particularly important, which is based on the duty of self-regulation and control by those who carry out a professional activity that has an impact on the environment, and which is backed up by the obligation to carry out the necessary studies and implement measures to prevent pollution.

Article 300 of Legislative Decree 152/2006 establishes that '*environmental damage is any significant and measurable direct or indirect deterioration of a natural resource or of the benefits provided by it*'. The subsequent provisions of the same article make it possible to state that environmental damage is a '*damage event*' and not a '*consequential damage*', i.e. it consists of the damage itself to the environmental asset and the protected asset is environmental health[12]. The damage in question concerns habitats and protected species, inland and coastal waters, the soil and, more generally, the health of the environment, i.e. a collective good.

In this context, it is possible to understand the reason for centralising the powers of intervention and repression of environmental offences in the Ministry of the Environment, as provided for in Legislative Decree. 152/2006: the protection of a collective, unitary but also intangible asset, such as the environment, is reserved to the State, which represents the (collective) interests of citizens. In fact, active legitimacy (more simply, the power to act in order to protect a right) lies exclusively with the Ministry of the Environment, which can also bring civil actions in criminal proceedings, unlike the previous regulations, which also legitimised local authorities (regions, provinces and municipalities) to bring legal actions for compensation for environmental damage affecting property within their territory. However, local authorities may claim compensation for damage other than environmental damage in the strict sense of the term, i.e. they may claim compensation for any damage of a pecuniary nature resulting from the environmental tort *pursuant* to Article 2043 of the Italian Civil Code[13].

In this very brief summary of such a complex subject, two considerations seem indispensable.

The first concerns the provisions set out in part IV – Rules on the management of waste and the remediation of polluted sites – Title V – Remediation of contaminated sites of Legislative Decree no. 152/2006. In this respect, Article 239 – Principles and scope, provides that '*This Title regulates the remediation and environmental restoration of contaminated sites and establishes the procedures, criteria and methods for carrying out the necessary operations to eliminate the sources of pollution and in any case to reduce the concentration of polluting substances, in accordance with the Community principles and standards, with particular reference to the "polluter pays"*

12 See Galletto, Responsabilità civile e azione risarcitoria in sede amministrativa per danno ambientale (Civil Liability and Administrative Action for Environmental Damage) in Foro Padano, 2014, 32

13 For example, the costs incurred for clean-up or reclamation, the damage caused to the image of the entity on whose territory the environmental damage occurred, the damage to the tourist vocation of the area, the cost of staff assigned to additional tasks in order to remedy the contamination, etc.

principle. The premise is therefore similar to that of environmental damage, i.e. a contaminating or potentially dangerous event that may cause an environmental and health risk: however, whereas in remediation legislation, the protected matrices are the soil, subsoil, landfill materials and groundwater, environmental damage also includes the risk of damage to natural species, *habitats* and groundwater and non-groundwater.

Despite the de facto lack of effective coordination between the two disciplines, it can be said that the objective pursued is the same in any case, since the administrative procedure also pursues the same restorative objectives and therefore constitutes a form of compensation for environmental damage, albeit mediated by the P.A.'s ordering power.

The second consideration concerns the hypothesis that more than one party is responsible for a pollution event: in this case, the obligation is partial, i.e. – in accordance with the '*polluter pays*' principle – the joint and several liability provided for in Article 2055 of the Italian Civil Code does not apply: Article 311, paragraph 3, of Legislative Decree 152/2006 provides that in cases of joint liability for the same damage, each person is liable to the extent of his own liability and that the debt is transferred to the heirs '*to the extent of their actual benefit*'.

As with all liability risks, environmental damage can also be insured. This is done by means of an insurance cover that indemnifies the policyholder, on the one hand, for the damage that may be caused to his assets (e.g. the company's premises) as a result of the pollution and, on the other hand, for the costs that may be imposed on him by the public administration or the State to carry out all the activities necessary to clean up the sites or those necessary to compensate third parties for the damage caused by the pollution, obviously within the limits provided for in each cover.

Environmental risk insurance is not only a strategic solution for dealing with and managing risks that could expose a company to particularly significant economic damage, it is also an instrument of primary social importance in that, on the one hand, it makes it possible to carry out environmental remediation work that would otherwise risk being borne by society because of its cost and, on the other hand, it contributes to the efficient selection of virtuous companies by excluding from its compensation those who endanger the environment by deliberately choosing to reduce attention to prevention in favour of improvident cost-cutting policies.

Italo Partenza

Lawyer and founder of ITC Law

2.2 Ossible sources and scenarios of environmental damage

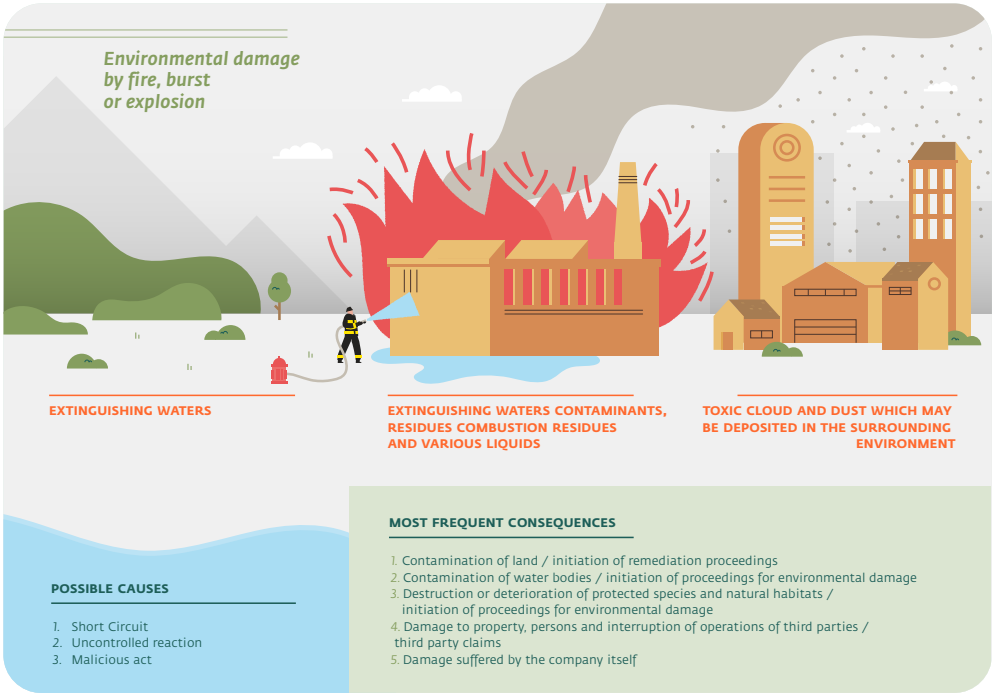
All activities that can have an impact on the environment (the target) are potential causes of damage; these activities can be associated with areas or parts of a production system that we can consider as potential sources.

For example, if we consider a generic production cycle of a company, it is evident that there can be can be many and varied potential sources of environmental damage associated with individual processes, for example:

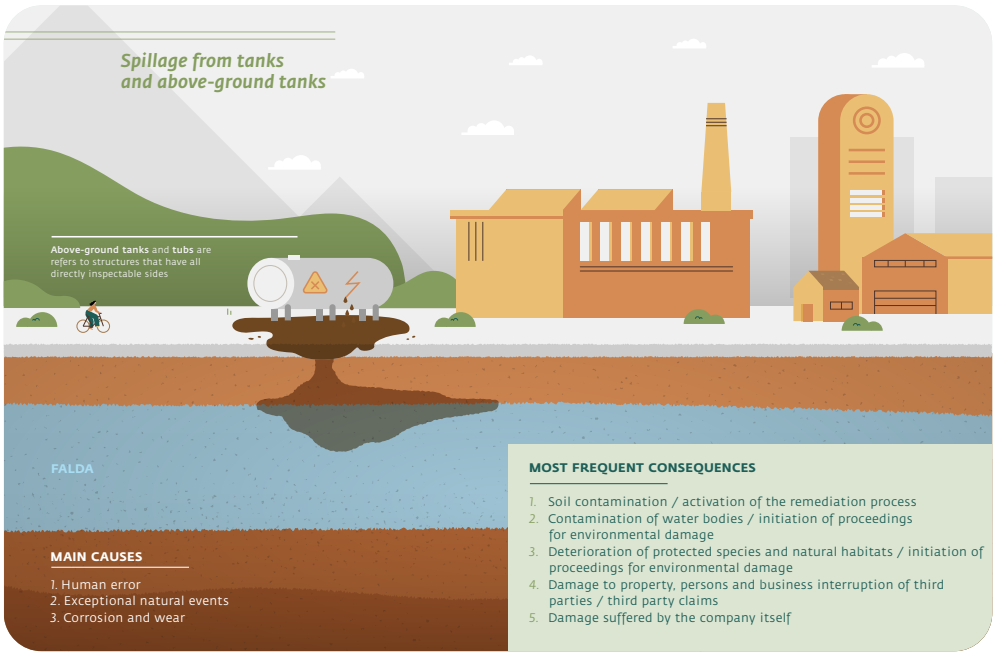
- Transport of raw materials;
- Raw material storage and handling;
- Processing steps;
- Storage and handling of products, by-products and waste;
- Transport of products;
- Waste water treatment and emissions;
- Waste disposal;
- Utility management.

By aggregating data from the Pool's claims management systems, we have summarised and grouped the wide variety of possible scenarios and installations from which claims may arise into the following 7 potential sources of environmental damage:

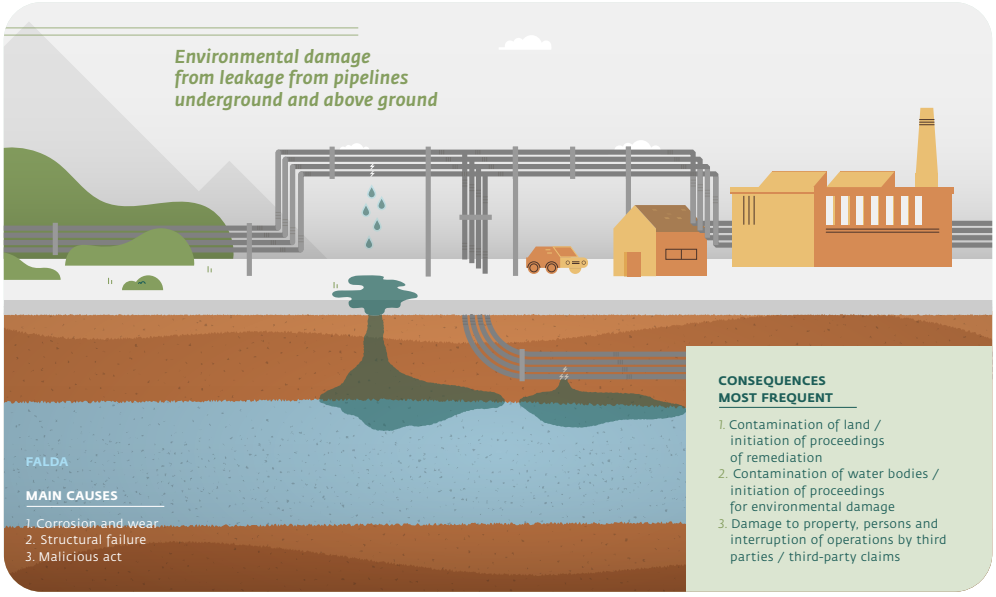
1. **Fire, which can affect the environment due to:**
   - ◊ Fire fighting water containing contaminants;
   - ◊ Dust and chemical dispersion and fall-out;
   - ◊ Burning of protected areas.



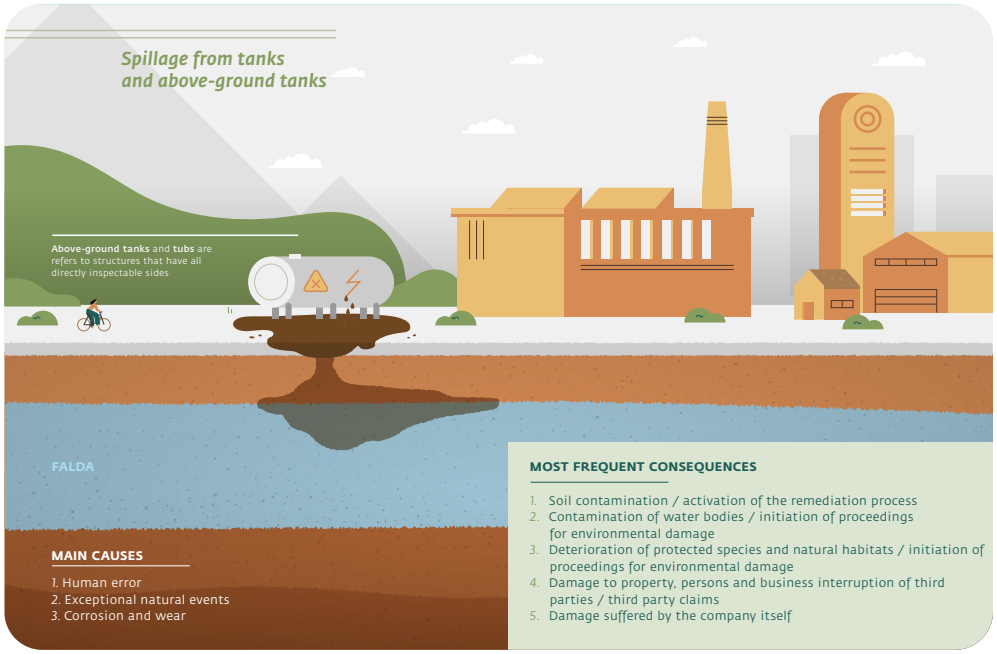
2. **Underground tanks, which can affect the environment due to:**
   - ◊ Loss of contents due to damage to the tank/tank walls;
   - ◊ Spillage during loading/unloading operations.



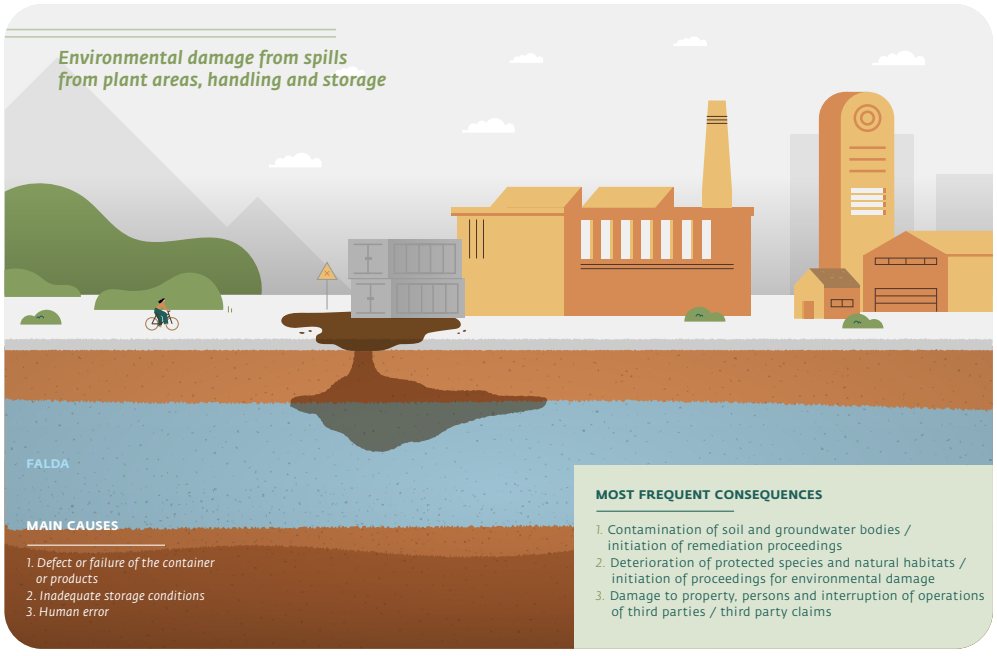
3. **Underground and above-ground pipes: loss of contents due to damage to the pipes themselves or to connecting sumps.**



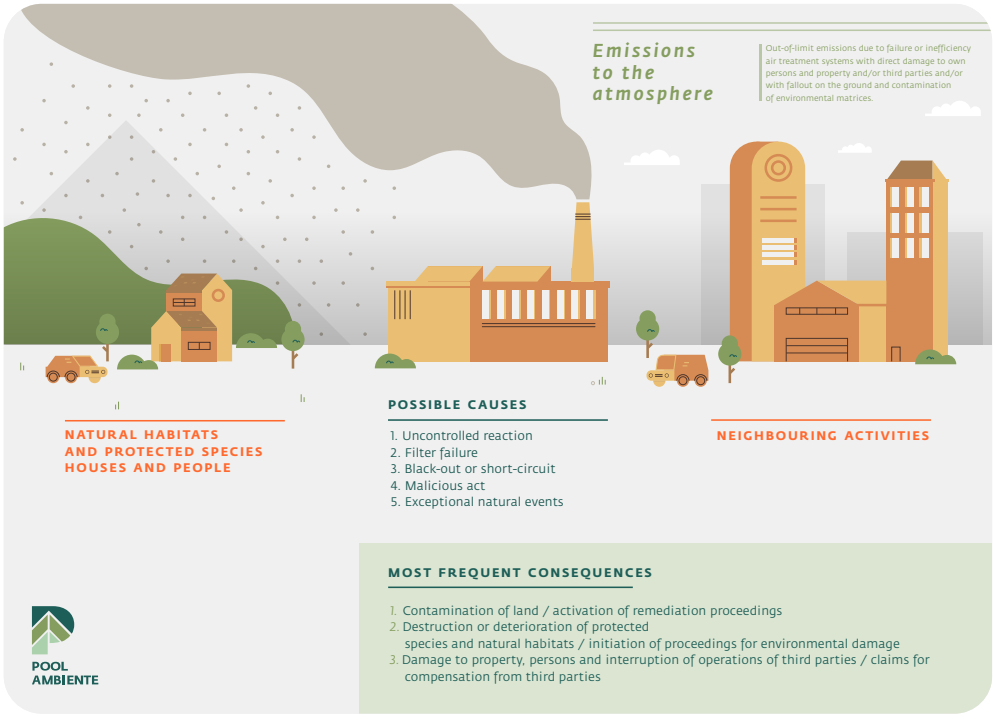
4. **Above-ground tanks, which can affect the environment due to:**
   - ◊ Loss of contents;
   - ◊ Spillage during loading/unloading operations.



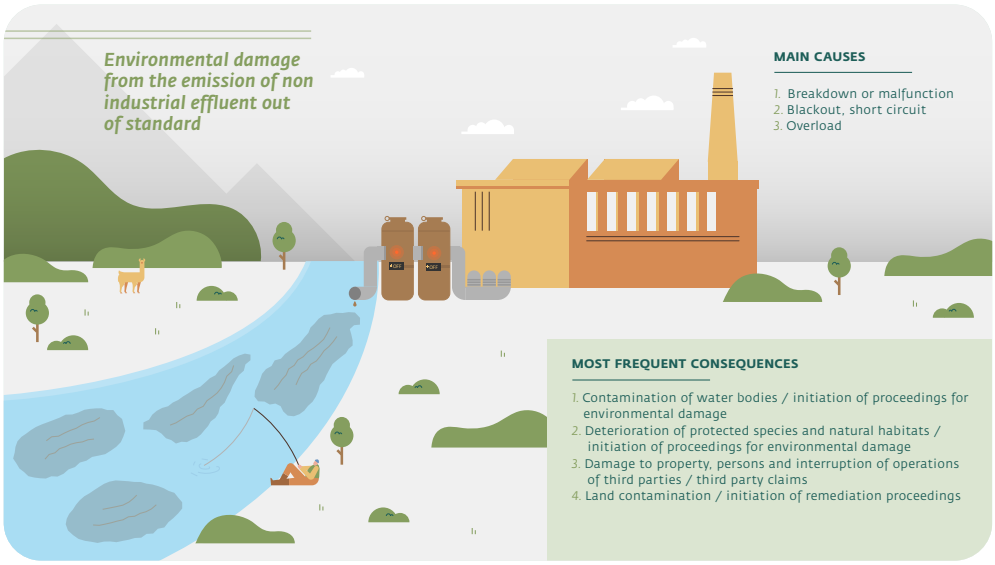
5. **Plant, storage and handling areas, which may affect the environment due to:**
   - ◊ Leaching, percolation;
   - ◊ Spillage during handling operations.



6. **Emissions to the atmosphere, which may affect the environment in the event of malfunctioning or inadequate treatment systems, with dispersion and fall-out of chemicals and dust above permitted limits.**



7. **Industrial waste, which in the event of malfunctioning or inadequate treatment systems, may result in the emission of pollutants in excess of acceptable limits.**



Then there is a further scenario relating to direct damage to natural resources without pollution. This scenario does not generally relate to springs on the site but to activities that may directly impact water or protected species and natural habitats.

The actual threat from a source is determined by the presence of possible targets, their vulnerability and the paths between the source and the target. A potential source may also affect more than one target, depending on the paths available.

For example, an industrial waste water treatment plant that receives and treats process water and then discharges it to a surface water body may affect the following targets:

- Soil and subsoil – due to leaks/spills from pipes or treatment tanks;
- Groundwater – due to infiltration and diffusion of liquids, that normally percolate through the subsoil;
- Surface waters, coastal waters and the sea – due to the discharge of incorrectly treated water;
- Animal and plant species, protected areas – due to the discharge of incorrectly treated water or the incorrect management of process sludge.

The *vulnerability* of each target is a function of the characteristics of the target and the specific site conditions, including soil permeability and lithology, depth to groundwater, geomorphology, presence of preferential diffusion pathways, etc.

Detailed analysis: UNDERGROUND TANKS

Underground tanks are containers, usually made of metal, that are used to store various types of liquids. The entire outer surface of these tanks cannot be directly inspected.

Underground tanks have been widely used in manufacturing facilities for many decades. However, they can pose a potential threat to the environment, especially if they contain hazardous substances. However, the fact that they are not normally visible, both from a technical point of view and in terms of the potential negative consequences, means that they are often overlooked, to the extent that they are now the main cause of soil and groundwater pollution.

The main cause of leakage from these tanks is corrosion leading to the perforation of the sheet metal; these processes are related to a wide range of factors, such as moisture in the surrounding soil, the presence of water inside the tank, the presence of induced currents (e.g. due to the proximity of railway networks, high voltage lines, ground leakage and electromagnetic machinery) and the presence of bacteria, mould and micro-organisms, which is more pronounced with newer fuels.

The thickness of the steel plate (and therefore the resistance of the tank with respect to corrosive processes) is not uniform between tanks. It is usually greater in large tanks for structural reasons; leading to the paradox that smaller tanks (indicatively less than 19 cubic metres) present a greater risk of contamination than larger tanks[14].

In terms of construction, underground tanks can be divided into two categories:

- **Single-walled tanks –** consist of a single shell located directly in the excavation and in contact with the surrounding soil, and therefore present the greatest risk in the event of leakage due to metal corrosion. Any losses from the tank will seep directly into the environmental matrices, without being externally detected until the leak becomes significant enough to cause a large drop in the level of product in the tank, or the dispersion of the contents into the environmental matrices is such that external targets (e.g. a well downstream of the site) are affected.
- **Double-walled tanks –** double-walled tanks have two coaxial walls so that the perforation of one wall will not result in the

14 See Tank Corrosion Study - Final Report, J Pim and J Searing, US EPA 510-k-92-802, 1988. The report shows that tanks with a wall thickness of less than 5 mm, generally with a volume of less than 19,000 litres, have a significantly higher perforation rate than tanks with a wall of thickness of 6-7 mm or more, typical of higher capacity tanks

immediate dispersion of the contents into the surrounding environment due to the presence of the second wall. The system is obviously only effective if there is a way of immediately signalling to the owner/operator that one of the walls has been perforated. This can be done by filling the cavity with a fluid (usually a gas) and continuously measuring its pressure or level. The system can also be applied to existing single-wall tanks by lining the tank internally with a resin or sheet metal shell, or by placing a tank made of flexible material inside the existing tank, creating a cavity between the new tank placed inside and the existing tank. This cavity can then be filled with a liquid and connected to alarm sensors. A similar system, which is more difficult to apply to existing tanks, is to place a single-walled tank inside a suitably waterproofed concrete tank.

A similar distinction can be made for pipes, which can be single or double walled, or placed in channels with a suitable gradient. These channels can direct any product leaking from the perforated pipe to an inspection pit, allowing early detection of alarm situations before environmental matrices are affected.

To date, there are no national standards in Italy that establish environmental safety criteria for existing single-wall underground tanks. A ministerial decree was issued in 1999 to remedy this shortcoming[15], but after its annulment by the Constitutional[16] Court in July 2001, and despite the fact that Law No. 179 of 2002[17], which implemented the Constitutional Court's ruling, established that the Ministry of the Environment and Territory should regulate the technical requirements for the installation and operation of underground tanks to prevent pollution of environmental matrices, nothing has been done in over twenty years since then.

As we have already pointed out, it seems that the emphasis has been on 'punishing' responsibility rather than establishing rules to prevent accidents.

The only existing national regulations mainly concern newly installed underground tanks, and in particular plant engineering, safety and health protection aspects, rather than environmental and pollution prevention aspects, or, for example, the procedures for cleaning up fuel distribution outlets, once the tanks have impacted on the environmental matrices[18].

15 Ministerial Decree 246 of 24/05/1999 – "regulation containing standards concerning technical requirements for the construction, installation and operation of underground tanks"

16 Judgement No. 266 of 2001, the Constitutional Court ruled on the two appeals lodged by the Autonomous Province of Trento, which had brought a dispute against the State concerning the attribution of powers, claiming that the provisions issued by the Ministry of the Environment infringed its legislative and administrative autonomy, due to the absence of a delegated law by Parliament

17 Law 179/02 Art. 19: New standards for the construction, installation and operation of underground tanks

18 Ministry of the Environment Decree 31 of 12/02/2015 on simplified criteria for the characterisation, safety and remediation of fuel sales outlets

At the local level, the situation is not much better, with numerous and inconsistent regional and municipal rules and regulations creating a fragmentary and incomplete legal framework that does not allow for any real action to prevent the environmental impact caused by this very common but neglected type of installation.

Within this legal framework, perhaps the most widely used and established technical reference are the guidelines published by ARPA Lombardia[19] which, however – in addition to the limitation inherent in their nature as technical guidelines – do not deal with certain fundamental aspects for the very large number of existing tanks and, in any case, place the emphasis on measures to mitigate the pollution caused, rather than on preventing it. In fact, it is proposed that leak tests should be carried out annually or every three years (depending on the age of the tank). However, these tests will at best allow us to establish that the tank has been perforated, but no timetable is proposed for carrying out integrity checks, which would allow us to establish the remaining thickness of the sheet metal and thus estimate the remaining useful life before the actual perforation occurs.

In this context, we think it is interesting to note that in several Western countries, single-wall underground tanks and pipelines are banned by law or have a limited life span, precisely because they are so dangerous. In France, for example, underground tanks must be double-walled or housed in an impermeable containment tank, and since this is a legal requirement, single-walled underground tanks are therefore not insurable.

In California, the maximum permitted service life of a single-wall underground tank is 30 years, which however, is actually longer than the average lifetime of an underground tank.

In fact, there are authoritative studies on the subject, which put the probability of a buried tank being punctured after only 15-20 years of service[20] at around 30%, and which estimate the average life of a tank to be around 23 years[21]. The following graph shows the data taken from

19 ARPA Lombardia, LG.BN.001 rev. 0 of 15/03/2013

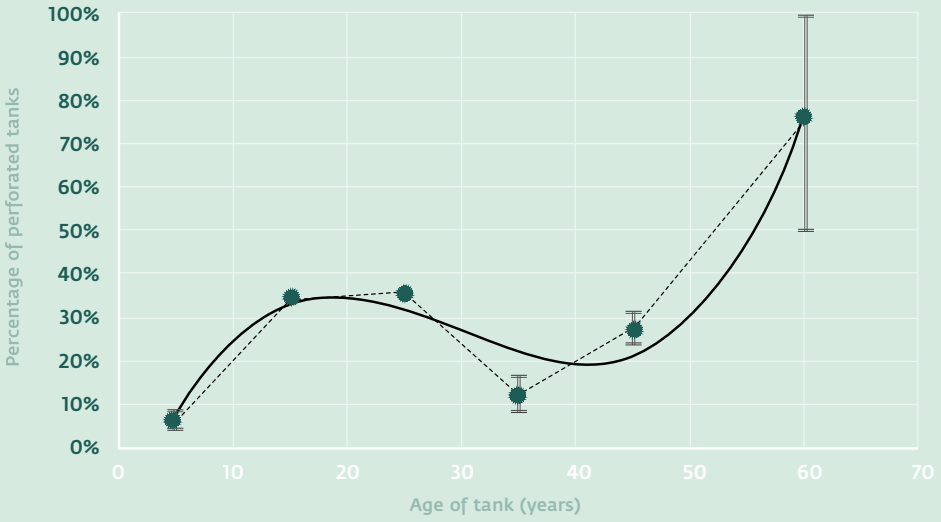
20 Garrity,Kevin C – Cathodic protection of Underground Storage Tanks, SIgma Magazine, Febb 1986; Skabo and L.H West – "Evaluation of Corrosion Resistance", Hinchman Company, Detroit, 1966, citati da Bogner – "Review of internal corrosion of Underground fuel storage tanks, Anticorrosion methods and material", vol 37 n. 6, 1990

20 Garrity, Kevin C – Cathodic protection of Underground Storage Tanks, SIgma Magazine, Feb 1986; Skabo and L.H West – "Evaluation of Corrosion Resistance", Hinchman Company, Detroit, 1966, cited by Bogner – "Review of internal corrosion of Underground fuel storage tanks, Anticorrosion methods and material", vol 37 no. 6, 1990

21 See 'Tank Corrosion Study - Final Report', J Pim and J Searing, US EPA 510-k-92-802, 1988. Based on a sample of more than 500 tanks, the report found that the average age of a perforated tank was around 23 years

the above-mentioned study, with an indication of the 'uncertainty' of the statistical data, understood as the limited number of tanks examined[22]. It is evident that the risk of perforation exceeds 30% on average for tanks over 15-20 years old, and then increases non-linearly up to 75% for tanks over 60 years old. The non-linear behaviour can be attributed to the presence of other co-determining factors in the corrosive process, the most important of which is the thickness of the steel plate, which is typically related to the size of the tank. In fact, the study shows that the tanks that were found to be perforated were predominantly made of sheet metal less than 4.5 mm thick (which is typical of the tanks examined in the study, which had a capacity of less than 19,000 litres).

Figure 2.1 Percentage of perforated tanks as a function of tank age (taken from "Tank Corrosion Study - Final Report", J Pim and J Searing, US EPA 510-k-92-802, 1988.



22 The number of tanks examined with an average age of around 15 and 25 years was much higher than the number of younger or older tanks. Consequently, the number of tanks around 15 and 25 years old is statistically more 'robust' (small dots) than the number of tanks over 25 years old (large dots), which therefore have a greater statistical uncertainty.

In the United States, a number of prevention and mitigation criteria for single-wall tanks have been required by law since 1988. These include overflow valves and corrosion protection systems, as well as adequate financial guarantees for the remediation of environmental damage and liability to third parties that covers the tank and its piping. However, the risk is so high that some insurance trade associations - whose business is statistical risk analysis - have decided not to insure single-walled underground tanks older than 20 years and to withdraw from any policy for tanks older than 26 years (although some manufacturers still guarantee their tanks for 30 years), or to quote discouraging premiums and excesses[23].

If you consider the number of tanks in Italy that are over 50 years old, you can get an idea of the current precarious situation in which we live!

It is important to remember that underground tanks are not standalone elements, but are part of a larger system that includes:

- Distribution and venting pipes
- Coupling and loading system

Dangerous substances contained in underground tanks can contaminate environmental matrices, not only through leaks due to the corrosion of the tanks and the pipes connected to them, but also through errors in loading/unloading operations or technical issues with the equipment used (and therefore, ultimately, often as a result of making errors when checking the suitability of such equipment and through use that is not in accordance with the specifications). In these cases, risk reduction is mainly determined by the implementation of an appropriate personnel training plan and fail-safe or fail-proof systems.

All of these components, for which technical solutions are proposed for newly installed tanks, are not covered by the ARPA guidelines cited for existing tanks, **so even if the recommendations are followed, checking the tightness of the tanks does not in fact provide any guarantee of preventing pollution that may be caused by the system as a whole.**

To summarise, the following types of measures can be implemented to improve the safety of tanks, their associated pipework and their loading and unloading operations:

23 "Guide to Tank insurance" by the Association of State and Territorial Solid Waste Management Officials ASTSWMO cited by J O'Brien in "Aging Underground Storage Tanks – Is 25 the New 30" in Fuels Market News, 2019

PREVENTIVE MEASURES

They are of paramount importance because they eliminate or at least greatly reduce the likelihood of an accident occurring that could result in environmental damage. There are different types, for example:

- **Double-walled tanks** with a suitable detection and alarm system in the cavity between the two walls[24] (or the tank placed in a watertight containment tank, with alarm sensors inside the tank);
- **Double (or triple) walled pipework**, with leak monitoring and alarm system similar to tanks. Less effective, but still safer alternatives to single-wall solutions are sometimes used for pipework, such as double-walled pipes that are inclined so that any leaks are directed towards alarmed or non-alarmed inspection pits;
- **Active cathodic protection systems** to slow down the rate of corrosion of the tank and the metal pipework. If properly installed and maintained, they can virtually stop corrosion processes, so much so, that they have been mandatory in some European countries for decades[25]. To be effective, the protection must be of the impressed current or sacrificial electrode type;
- **Thickness tests (or integrity tests)**: considering that corrosion is a process that, due to the absence or inefficiency of a cathodic protection system, attacks areas of the sheet metal by thinning its thickness to the point of perforation, these tests allow the residual thickness of the sheet metal to be measured at the nodes of a measuring grid, thereby allowing early intervention before perforation can occur. Using special software and taking several measurements over time, they can also be used to estimate the speed of the corrosion process and the remaining service life of the tank. They are particularly important for single-wall tanks;
- **Anti-overflow device or overflow valve:** stops the flow of product when the tank reaches its maximum fill level, preventing spillage;
- **Adequate training** of the personnel in charge of loading and unloading operations, to enable them to carry out the operations safely, to be aware of possible problems, to check the suitability of the materials and equipment available and to intervene promptly in the event of an accident;

24 To be effective, such a system must be based on the decrease in pressure or level of the liquid contained and not on the detection of the contents of the tank in the cavity: in this case, as has been experimentally observed in some cases, the accidental perforation of both walls could prevent detection.

25 E.g. Netherlands, reported by Bogner – 'Review of internal corrosion of Underground fuel storage tanks, Anticorrosion methods and material', vol 37 no. 6, 1990

MITIGATION MEASURES

Allow us to intervene on the scale of the accident that has already occurred to reduce its severity and consequences. There are several types, including:

- **Leak tests:** these allow you to check whether the tank is perforated and therefore, particularly in the case of single-wall tanks, whether the liquid contained in the tank can leak into the ground and water table. Contrary to what is often believed, they are not really preventive systems. Depending on the frequency with which they are carried out, they may at best allow potential or actual leaks to be detected before they become large enough to be obvious, for example due to a rapid drop in product level in the tank or the impact of downstream targets. They do not allow the detection of even extensive corrosive processes in progress, nor of small leaks or 'bleeding', which over time can lead to the contamination of the surrounding[26] soil and groundwater. It should be noted that leak tests typically have a detection limit of between 0.1 and 0.4 l/h[27]. This means that leaks of up to a few litres of product per day or a hundred or so per month will normally go undetected, even though they can cause contamination of large areas of groundwater[28].
- **The installation of a watertight sump** at the loading inlet prevents the spread of product spillage during loading/unloading due to incorrect procedures or a problem with the pipe-tank connection or the overflow valve.
- **Subsurface leakage monitoring system.** This system, which is not widely used in Italy, consists of sensors that analyse the interstitial gas in the soil, making it possible to detect the possible presence of product in the soil surrounding the tank.

26 See "Tank Corrosion Study - Final Report", J Pim and J Searing, US EPA 510-k-92-802, 1988. In the report it is stated that even accurate tests can only reveal major leaks, and that the analysis accurate analysis of the extracted tanks revealed almost twice as many leaking tanks than than that identified by the leakage tests, due to the presence of the corrosive fouling that initially limit the leakage of product.

27 Manual No. 195 Part 1-Edition 2000 and No. 195 Part 2-Edition 2003 "Leak Tests on Underground Tanks".

28 It must be borne in mind that the concentration limits of pollutants in groundwater are normally in the order of micrograms/litre, or parts per billion. A contamination caused by a few litres of a chemical can therefore theoretically impact billions of litres of groundwater, or millions of cubic metres. cubic metres. As an example, considering benzene, with an acceptable limit concentration of 1 microgram/ litre, on a purely theoretical level, the complete dispersion of one litre of benzene is potentially capable of contaminate several hectares, or - **considering an average percentage of interstitial spaces in the soil of 30% - to create a plume of contamination in the water table approximately 1.5 km long, 200 m wide and with a thickness of about 10 metres. A single litre of benzene, which could be lost from an underground reservoir in a few hours without being detected by this type of test**

- **Groundwater monitoring network.** This makes it possible to detect the presence of the product in groundwater before it spreads outside the site perimeter in the direction of groundwater flow.

Obviously, given the critical nature of this type of installation, the preventive measure that precedes all of the above is the replacement, where possible, of single-walled underground tanks with above-ground tanks, or with structures whose entire surface area can be directly inspected (raised above the ground), or with double-walled tanks with continuous monitoring of the cavity, which undoubtedly present less risk of hidden and prolonged leaks over time and are easier to check.

2.3 Why environmental damage events occur

There can be many causes and contributing factors to any environmental damage scenario, some of which recur more frequently than others. Among these are undoubtedly **human error** and **poor maintenance.**

Human error is an inherent risk in any human activity and can be due to structural factors such as lack of training and on-the-job training, inexperience or unsuitability to perform a particular task, as well as other factors such as fatigue, haste, stress, illness or distraction caused, for example, by the use of a mobile phone at work.

On the other hand, *wear and tear and deterioration* are intrinsic factors of instruments and installations and must be monitored and counteracted by appropriate *maintenance*. **Maintenance can therefore be considered as a basic type of prevention activity,** but one that has an even broader meaning and scope.

In fact, prevention activities should take into account the entire process, starting with the choice of the location of a plant, the best technologies to be chosen, the resources to be used, the possible impact on neighbouring areas, and the definition of the necessary maintenance activities.

However, these factors, which affect the initial planning of a business activity, are virtually never taken into account. This is probably due to a lack of awareness of the potential sources of damage inherent in one's own business, of the potential risks, understood as both likelihood and scale, of the value and usefulness of an environmental resource, and of the possible consequences of an accident on one's own facilities, on one's own business, and on the social and environmental context in which one operates.

"In summary, one might venture to say that the origin of environmental damage lies in the lack of culture, the culture towards the environment and the relationship between human activities and the environment itself."

2.4 Targets and consequences of environmental damage events

The possible targets or receptors that may be affected by an environmental damage event are, by definition, primarily the environmental matrices soil, surface water and groundwater, the sea, animal and plant species and the utility or function that each of these elements represents.

Today, the atmosphere is still not officially included among the potentially affected environmental matrices. It is usually considered only as a medium through which contamination can reach another target. However, if we consider that probably the most serious environmental damage, i.e. climate change, is generally attributed to greenhouse gases emitted into the atmosphere by man, it becomes more immediate to consider it as a separate and potentially affected environmental matrix, and not only as a possible migration pathway for contaminants. Moreover, there are already authoritative opinions (e.g. Court of Cassation[29]) on the fact that air is an environmental matrix and that impacts on air constitute environmental damage and the European Commission recently published a proposal for a directive on air quality[30].

Targets may be directly or indirectly affected by an incident, but they may in turn become vehicles of contamination and affect other targets, primarily humans.

The spillage of contaminants on land can in fact make it unhealthy for people to stay there, through dermal contact with the substances in the soil, inhalation of the vapours or dust, or ingestion by plants or animals that have grown and fed on that land.

Discharging process water at high temperatures can also have an impact on the life of animal and plant species, and consequently on humans. Think for example of the death of fish due to the eutrophication of a body of water, or the development of toxic micro-organisms that render water and animal species unusable as food.

29 Cass. sez. III pen., judgment of 14 November 2018, no. 51475

30 Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on ambient air quality and cleaner air for Europe (recast) COM/2022/542 final, October 2022

The release of harmful substances into the atmosphere has a direct impact on human health, but can also alter the quality and quantity of animal and plant species that humans benefit from.

Contamination of an aquifer has a direct impact on human health, but it can also affect the animal and plant species that use that resource and from which humans in turn benefit. The alternative is not to use that aquifer, with the consequence that other resources have to be found.

Damage to habitats can lead to changes in the balance of natural cycles, such as the role of bees, with serious consequences for humans.

An abandoned contaminated site is not only a danger to human health and all other species; it is also an area that cannot be used by the community.

Clean up or remedial actions in the event of environmental damage have a significant economic impact on businesses and the communities, and therefore on people.

> "The examples could go on and on, and would all lead to the same conclusion: any damage to the environment ultimately affects man. This is why we believe it is important for a culture of environmental protection to become more widespread."

ARTICLE

Environmental liability risk management – The priorities – by Paola di Toppa, Area Manager Assessment of Environmental Damage of ISPRA

State action against environmental damage

The Environmental Damage Protection Law (Part VI of Legislative Decree 152/2006) provides that the State, represented by the Ministry of the Environment and Energy Security (MASE), may take action to claim compensation for environmental damage against the responsible party. Therefore, the operator who is responsible for causing environmental damage while carrying out his business, is obliged to intervene with appropriate measures and interventions to restore the damaged natural resource to its ex ante state and to compensate for the loss of services associated with it.

Within this framework, the National System for Environmental Protection (SNPA) is called upon to provide the support required by the MASE in the preliminary investigation phases to be initiated following the notification of events, accidents or other situations that have an impact on natural resources and for which it is appropriate to assess the existence of damage profiles or elements indicating the existence of an imminent threat of this occurring.

The origin of the notifications that are the starting point for State action in the field of environmental damage can be divided into two main types: notifications from the Public Prosecutor's Office regarding the initiation of criminal proceedings against persons accused of committing offences with consequences for the environment and notifications and reports that initiate an administrative procedure for which the MASE is responsible.

Administrative procedures can be initiated as follows:

- notifications by the operator responsible for the damage or threat of damage to the environmental, pursuant to Articles 304 and 305 of Legislative Decree 152/2006;
- requests submitted by third parties, both public and private, with an interest in preventing or remedying the damage, pursuant to art. 309 of Legislative Decree 152/2006;
- all reports and information on the basis of which the MASE, having identified possible situations of damage or threat of damage, considers it appropriate to take action against the person responsible;
- Requests for State intervention pursuant to Article 309 of Legislative Decree 152/2006.

Requests for State intervention pursuant to Article 309 of Legislative Decree 152/2006

As mentioned above, the introduction of the possibility of requesting state intervention in the regulation of environmental damage as of 2006 allows regions, autonomous provinces, local authorities and private subjects to play an active role in the process of preventing and remedying environmental damage by submitting complaints directly to the Ministry of the Environment.

In this context, in November 2020, the Ministry of the Environment made available and sent to all the Prefectures in Italy, the forms for submitting requests for State intervention pursuant to Article 309 of Legislative Decree 152/2006, for all cases of environmental damage or imminent threat of environmental damage.[1] The aim is to standardise the methods of submitting applications to the Prefectures – Territorial Offices of the Government - in full compliance with the legislation.

As part of the administrative procedure following the receipt of applications, the SNPA carries out preliminary technical assessments to identify the environmental criticalities reported and, in the most serious cases (which are included in cases of environmental damage or threat of environmental damage), the criteria for adopting preventive and remedial measures.

The outcome of the preliminary assessment carried out by the SNPA may therefore lead the MASE to take action to require remediation and prevention of damage by means of orders or ministerial decrees addressed to the party responsible. In other cases, which do not constitute environmental damage according to the law, but which nevertheless require solutions through other environmental protection instruments, the MASE may issue reminders to local authorities to resolve critical environmental issues.

In terms of the nature of the requests for government intervention, there is a preponderance of reports on events or problems arising from activities that by their very nature, put pressure on the area. For example, as can be seen from the map in the figure, the 16 cases that were the subject to a preliminary technical assessment in 2021-2022 concerned industrial facilities (3 cases), waste management installations (3 cases), construction sites (2 cases), water treatment installations (1 case) and the creation of unauthorised landfills (1 case). The remaining cases concern events in natural or agricultural areas that were affected by waste disposal (3 cases), land use change (1 case), ground fallout from atmospheric emissions (1 case) and park management issues (1 case).

Paola di Toppa

Area Manager Assessment of Environmental Damage of ISPRA

Diagram 2.2 Type of site requesting state intervention for environmental damage instituted in 2021-2022 (Source: ISPRA)

The type of events reported obviously are even more varied. The table below provides a summary of these reports that were the subject of the 16 investigations carried out within SNPA. It also shows the type of entity that submitted the request for State intervention to the MASE and the relative legitimate interest.

In 5 of these cases, ISPRA, through the joint work with the Territorial Agencies (ARPA/APPA), has identified the existence of *evidence of environmental* damage requiring remedial action or indications of *damage* for which the MASE may impose the necessary assessment activities on the responsible party.

Table 2.3 Types of events reported in requests for state intervention for environmental damage processed by the SNPA in 2021-2022

REPORTED EVENT	APPLICANT	INTEREST
Dumping of waste into a groundwater lake	Municipal authority	Control of the area of competence
Fire in a disused warehouse with waste storage	Municipal authority	Control of the area of competence
Release of pollutants from an industrial site	Municipal authority	Control of the area of competence
Release of pollutants into groundwater due to liquid waste storage on a brownfield site	Municipal authority	Control of the area of competence
Storage of waste	Territorial control authorities	Environmental control
Spreading of waste on agricultural land	Territorial control authorities	Investigation in criminal proceedings
Release of pollutants following an unreported accident	Territorial control authorities	Environmental assessment/control
CTC exceeded for discharge into the soil	Territorial control authorities	Environmental assessment/control

REPORTED EVENT	APPLICANT	INTEREST
Incorrect management of a park in an urban area	Associations	Environmental protection and public health
Impact of a sewage treatment plant discharge resulting in the deterioration of river water quality	Associations	Environmental protection and public health
Waste disposal at a park in an urban area	Associations	Environmental protection and public health
Air quality limit values exceeded	Associations	Environmental protection and public health
Damage to an underground asbestos-cement water pipe on the applicant's property as a result of infrastructure works.	Private citizen	Owner of the damaged area
Change in the intended use of the area	Private citizen	Resident in the area adjacent to the damaged site
Waste on the ground	Private citizen	Company operating in the area adjacent to the damaged site
Atmospheric emissions	Private citizen	Resident in the area adjacent to the damaged site

[1] The forms are available on the website of the Ministry of the Environment at the following link: https://www.mase.gov.it/sites/default/files/archivio/allegati/lista_controllo_danno_amb_309.pdf

2.5 Tools for effective environmental risk management

Effective environmental risk management involves the following steps:

1. Identification of potential sources of risk;
2. Identification of potential targets;
3. Definition of source-target pathways;
4. Verification of the prevention and mitigation measures adopted;
5. Identification of residual risks and the assessment of possible consequences (damage);
6. Identification of the resources for damage management and remediation.

The first step in environmental risk management is therefore to identify all potential sources of risk. This requires an understanding of the specific characteristics of the site, both in terms of the production cycle (raw materials, processing, intermediate and final products, waste, storage and handling areas) and ancillary activities such as utilities, treatment plant and emissions. A useful tool to ensure that no potential source is overlooked is to refer to the 7 sources indicated in this chapter.

The second step is to understand the context in which the site is located in order to identify any sensitive targets, other than humans, that may be affected by the activities carried out at the site. Complementary to this phase is the definition of the vulnerability of the targets, i.e. how the sources can reach the targets and the level of their exposure (source-pathway-target model).

After having identified how the sources may affect the existing targets and assessed their vulnerability, all the preventive measures to be taken to avoid a possible incident and the mitigating measures to limit the possible consequences should be defined.

The final step in the process is to assess the residual risks and the economic consequences. This assessment has to take into account not only the direct damage that may be caused to personnel and environmental matrices, but also the potential damage to third parties and the damage to the company's operations and image.

Implementing a certified management system (e.g. ISO 14000 or ISO 45000 certifications) is undoubtedly a valuable tool for carrying out the most comprehensive risk analysis and management.

However, with regard to the specific issue of preventing and mitigating the risk of environmental damage, reference should be made to UNI PdR 107:2021 which was drawn up with the specific aim of providing businesses with a practical tool for identifying the sources of risk and the measures to be taken, particularly with regard to plant maintenance and personnel training.

Assessing the extent of the potential damage will help to identify the resources that need to be allocated to ensure that the damage is remedied, in the form of budgetary provisions, financial instruments or by taking out a specific insurance policy, all of which will ensure the continuity of the company itself - and therefore the protection of its employees and related industries, and ultimately the entire socio-economic fabric in which the company operates.

Unfortunately, there are no immediate and effective instruments to determine the extent of this potential damage; several have been proposed at the level of individual European countries, but all of them are rather complex, difficult to use and equally difficult to verify by the public authorities[31].

In this context, a simpler and quicker approach, and one that is less subject to interpretation, could be based on objective criteria such as the type of activity, the volume of goods produced / processed and the size and age of the installations, similar to those used to determine the guarantees for installations subject to AIA requirements, possibly revised on the basis of the statistics regarding cases of environmental damage, bearing in mind, however, the relatively limited number of cases available to carry out a multivariate statistical analysis, and the need to cover the highest values in the range, and certainly not the average.

2.6 Risk management in Italy

Environmental legislation in Italy has evolved significantly over the past 25 years.In fact, the legislative decree known as the 'Ronchi Decree' transposing the European Directives on waste dates back to 1997, while the first national decree on the remediation of contaminated sites dates back to 1999. The Consolidated Law on the Environment was enacted in 2006 (Legislative Decree 152/06); in 2011, environmental offences were included in the text of Law 231 on corporate criminal liability; in 2015, the Law on environmental offences was introduced; and in 2022 environmental protection was included in the Constitution with the amendment of Articles 9 and 41.

If we consider that, in addition to the regulatory developments, the adoption of ESG criteria has recently become more widespread, that there is an increasing focus on sustainability issues and a growing concern about risks arising from climate change, and that environmental risks are perceived by companies as one of the most important risks to be addressed[33], it follows that the role of the environmental risk manager should increasingly become one of the main pillars of companies. Unfortunately, this is not the case.

The majority of Italian companies have EHS (Environmental, Health and Safety) departments, but there seems to be a lack of professional staff who have an organic and systematic vision of all environmental aspects, who do not limit themselves to

31 Of particular note are the Spanish (MORA), Irish and Dutch systems, which have been the subject of three years of discussion and comparison by the European Union: see ' 'Financial Provision – Protecting the Environment and the Public Purse',2018/20, Impel – European Union Network for the Implementation and Enforcement of Environmental Law

32 See Decree 141 of 26/5/2016 on the criteria to be taken into account when determining the amount of financial guarantees for establishments requiring an Integrated Environmental Authorisation (AIA)

33 E.g. World Economic Forum's Global Risks Report 2023, and Amadei et al, 'La gestione dei rischi ambientali nelle aziende italiane: risultati della survey' (Environmental risk management in Italian companies: survey results), Bocconi University 2019

checking regulatory compliance, but who can be active players in prevention, sustainability and the choice of production technologies, truly integrating these issues into business activities and building the company's reputation.

This shortcoming may be due to the fact that, unlike occupational health and safety, environmental risk prevention is not currently a legal requirement.

Prevention is typically the subject of AIA and AUA requirements[34], but mainly for aspects related to the monitoring of emissions and discharges (in fact, it should be remembered that the AIA regulations correspond to the transposition of the European Directive 2010/75/EU on industrial emissions or IED), except for extremely targeted and strict regulations on remediation, with possible administrative, civil and criminal liability. **However, there are no legal obligations to identify and manage environmental risks, which are largely left to voluntary instruments.**

To use a road safety analogy, it would be like not fining people for driving under the influence of alcohol, exceeding the speed limit or not having their vehicle regularly inspected, but fining them heavily after an accident. Fortunately, this is not the case with road traffic (and unfortunately there are many accidents anyway), but when it comes to **environmental damage, the focus is certainly more on repression and punishing responsibility than on preventing damage.**

Fortunately, the protection of the environment is becoming an increasingly sensitive and fundamental issue for society, which, both as a consumer community and as an element of pressure on politicians, could push Italian companies to consider environmental risk management as a crucial aspect, to be entrusted to competent and increasingly responsible professionals.

In doing so, companies would not only be protecting the environment, but above all, they would be protecting themselves and their business continuity and, consequently, the social and economic fabric of which they are a part.

34 Single Environmental Authorisation

2.7 Proposals for effectively promoting good practices in environmental risk management

The dissemination of good practices and a real commitment to environmental risk management can happen if and when they are perceived as adding value to the business.

The introduction of basic **regulatory obligations** regarding the identification of risk sources and the implementation of prevention and mitigation measures could certainly be a first step in this direction.

At the same time, the introduction of **economic incentives and acknowledgements** (ESG ratings, certifications, reputation) for companies that decide to invest in prevention would be another way of spreading an environmentally aware culture.

Another incentive could come from **consumers requesting** information on the initiatives taken and the effectiveness of the measures adopted to safeguard the environment. In this sense, certifications such as the PdR UNI 107/2021 are a way to make these activities visible that are otherwise usually kept behind the closed doors of companies, thereby enabling consumers to choose between genuinely virtuous companies and those that are more 'reckless'.

These are just a few hypotheses for promoting a culture of environmental protection, which can only be truly effective if it is pursued by all stakeholders: public authorities, companies and consumers.

3. CASES OF ENVIRONMENTAL DAMAGE IN ITALY

An analysis of the claims handled by Pool Ambiente in the period 2000-2022 can be found in the following paragraphs. Approximately 1,000 claims were studied in order to reconstruct the causes and dynamics of the accident, the matrices involved and the breakdown of settled costs by matrix and type of damage.

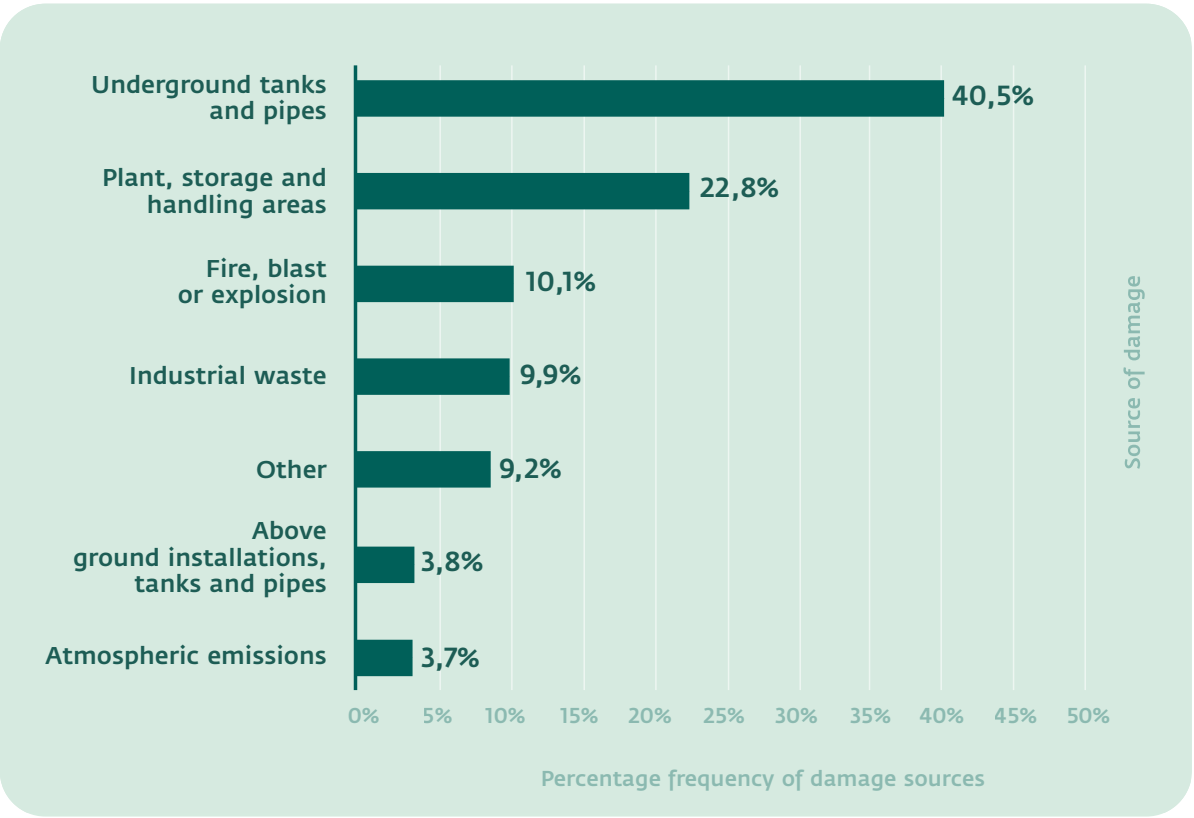
3.1 Sources of environmental damage

The figure below shows the percentage frequency of damage sources. During the evaluation stage, in only a few cases could leaks be traced back to underground tanks or buried pipes. Claims due to pipes have therefore been merged with claims from damage to underground or above-ground tanks and installations, depending on the location of the pipe.

It can be seen from the table that claims attributable to underground installations alone account for more than 40% of total damage, while damage originating in storage and loading / unloading areas (largely due to human error) accounts for more than 22%.

Problems related to atmospheric emissions and water discharges are less than 14% overall, perhaps also as a result of the increased controls required by the regulations and requirements contained in the authorisation documents for the company.

Figure 3.1 – Sources and scenarios of environmental damage: percentage distribution



3.2 Percentage frequency of the main causes of damage

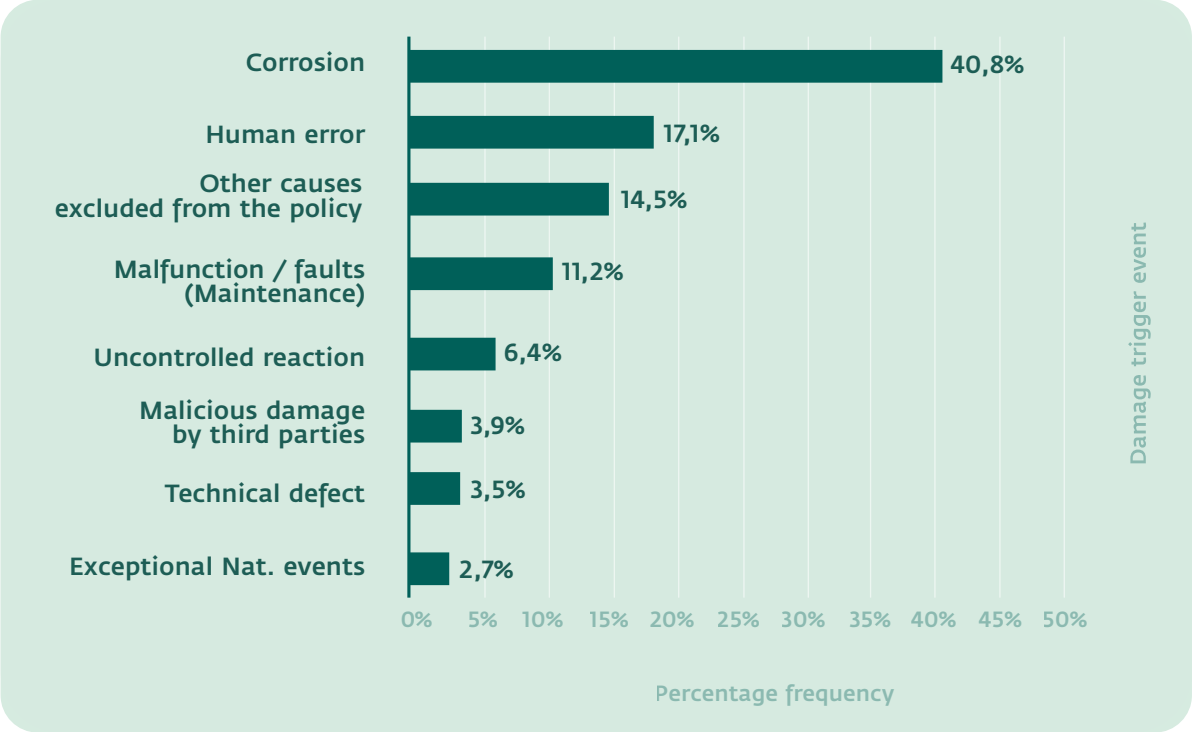
An analysis of the triggering causes of the damage event shows that by far the most important factor is corrosion and, in general, the ageing of materials and equipment (over 40%); this factor, together with malfunctions and failures (over 11%), indicates that inadequate maintenance is responsible for over 52% of accidents. In fact, corrosion is an entirely natural process, the effects of which can be countered, monitored and repaired. These are all activities that fall under the concept of plant maintenance.

"An analysis of the triggering causes of the damage event shows that by far the most important factor is corrosion and, in general, the ageing of materials and equipment (over 40%); this factor, together with malfunctions and failures (over 11%), indicates that inadequate maintenance is responsible for over 52% of accidents."

The human factor is directly responsible for more than 17% of accidents, and can be considered indirectly responsible for a further 10% of accidents. Technical defects can be considered as the consequence of an industrial process and control system that has failed to detect/eliminate them, and of a design that has not provided for redundancy or solutions that are in any case capable of eliminating the consequences of a possible failure; similar considerations can be made with regard to uncontrolled reactions that which ultimately result from an incorrect product formulation (and therefore a technical defect), or from an inadequate study of environmental and operating conditions and from inadequate control and preventive measures.

Exceptional natural events caused environmental damage in just under 3% of cases (e.g. deluges, floods or hurricanes washing away or otherwise dispersing material in outdoor storage areas, or causing tanks to overflow and spill chemicals). However, given the exponential increase in such exceptional weather events in recent years, this type of damage is also expected to increase, although it is now slightly less common than malicious damage by third parties (4%).

Figure 3.2 - Causes of environmental damage: percentage distribution



3.3 Consequences - Analysis of costs incurred by the company

As the following analysis of the costs incurred by the company is based on an analysis of the amounts paid in respect of claims, it should probably be noted that these costs:

- Are net of the excess and/or percentage excess, the amount of which varies according to the nature of the risk and the extent of the damage;
- In some cases correspond to the maximum / sub-limit amounts of the policy.

In addition, such settlement figures often do not include the following (not always insurable):

- Damage to the insured's property;
- The cost of the company's resources temporarily dedicated managing the damage, especially if they are at a high level (technical managers, plant managers, administrative managers, in-house lawyers);

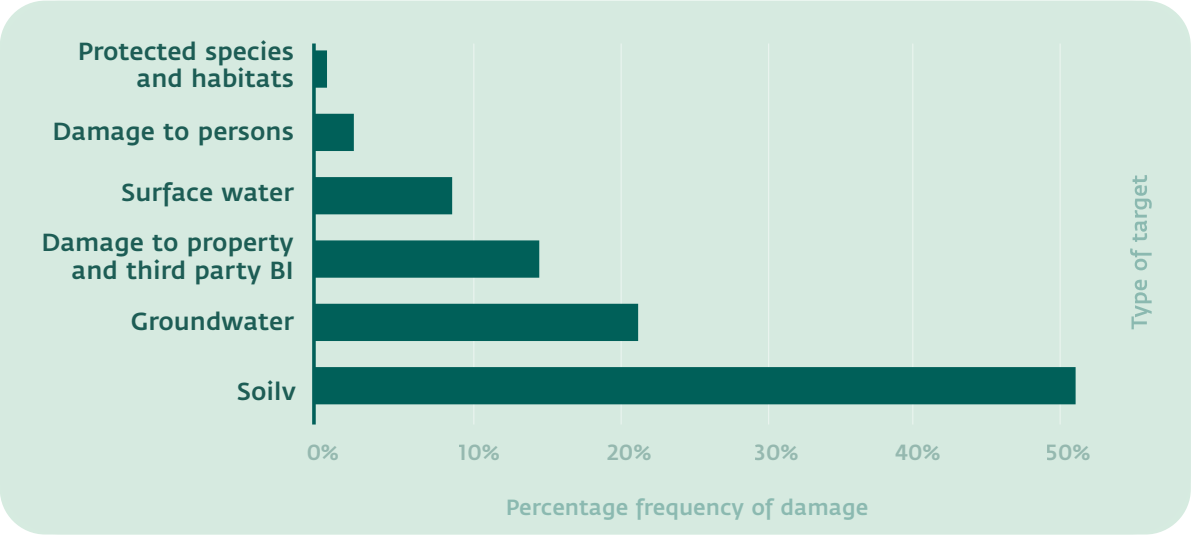
- Business interruption of and loss of revenue (e.G. due to delays in processing times, changes in business priorities, changes in the implementation of planned activities, etc.);
- Loss of market share;
- Damage to image;
- Increased cost of accessing credit lines;
- A decrease in investor confidence and esg rating, with a potential reduction in the company's market value;
- Postponement of planned investments and/or activities, resulting in lost opportunities (e.g. Start-up of new production lines, relocation, expansion, etc.);
- Stress-related damage to third parties, psychological damage and biological damage.

The amounts analysed should therefore be considered much more limited than the overall impact of environmental damage, but the considerations that emerge from this analysis are certainly interesting.

Figure 3.3 - Consequences of environmental damage: percentage distribution

The graph above shows that more than 82% of the claims examined affected environmental matrices, 15% caused damage to property or third parties, and only a small percentage directly caused damage to human health[35].

Figure 3.4 – Type of damage recorded: percentage distribution



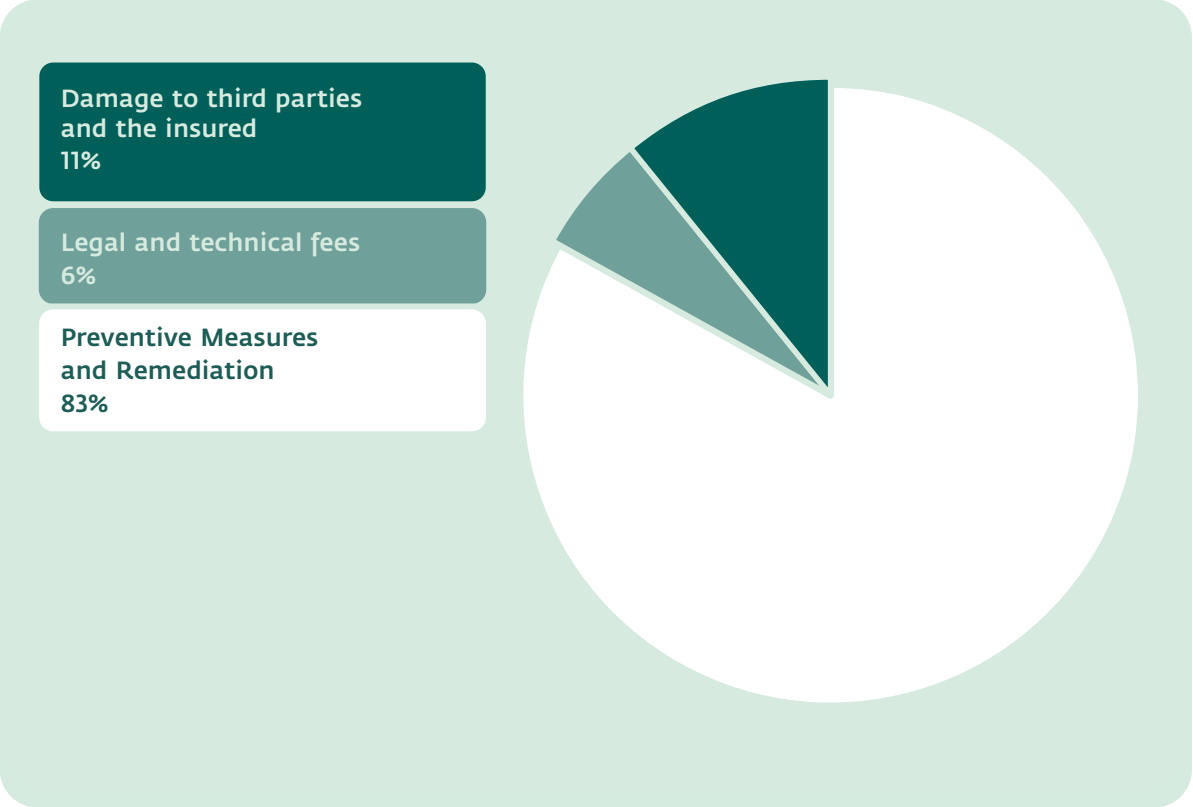
The graph above shows the type of target in the various damage cases analysed (where several targets were affected simultaneously, they were counted several times). It can be seen that more than 50% of the accidents affected soil, 22% groundwater and about 10% surface water.

It is also interesting to note that more than 80% of the targets of environmental damage do not therefore relate to damage to third parties, but constitute a different type of liability, which may be the subject of specific insurance guarantees and cover (environmental liability policies).

"More than 80% of the targets of environmental damage do not therefore relate to damage to third parties."

35 The same damage may have affected several targets; in such cases its impact is counted for each individual target. Damage amounts are not considered in this graph, only the number of claims.

Figure 3.5 – Percentage breakdown of the cost of a claim by type of damage



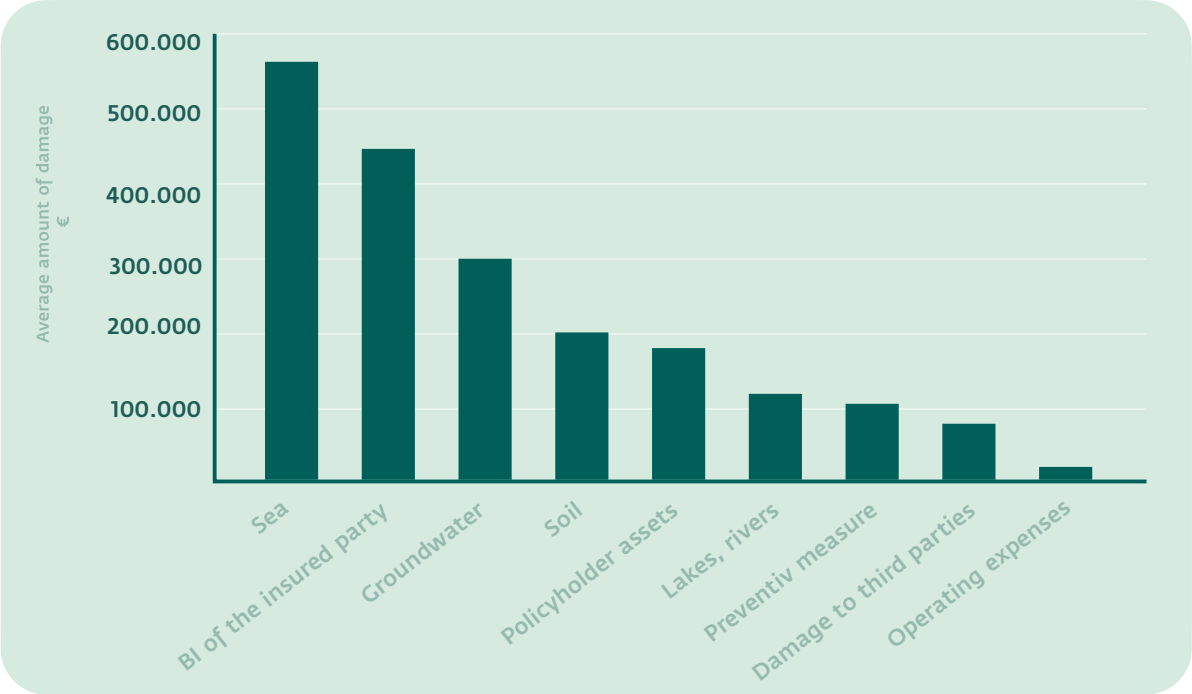
The graph above shows the distribution of the amounts paid out on claims by type of loss, regardless of the number of claims over the period considered.

In this graph, as in the graph showing the number of claims with an impact on the various targets, it can be seen that environmental damage has consequences and costs mainly related to remediation, with only a residual impact third parties and the assets of the company that caused the damage.

> "From this observation follows the obvious consideration that an extension of a third party liability policy to include accidental pollution would normally be inadequate to cover environmental liability claims."

36 The breakdown of amounts by type of loss was made for about 490 claims, totalling about €40 million.

Figure 3.6 – Average cost of a claim by type of damage

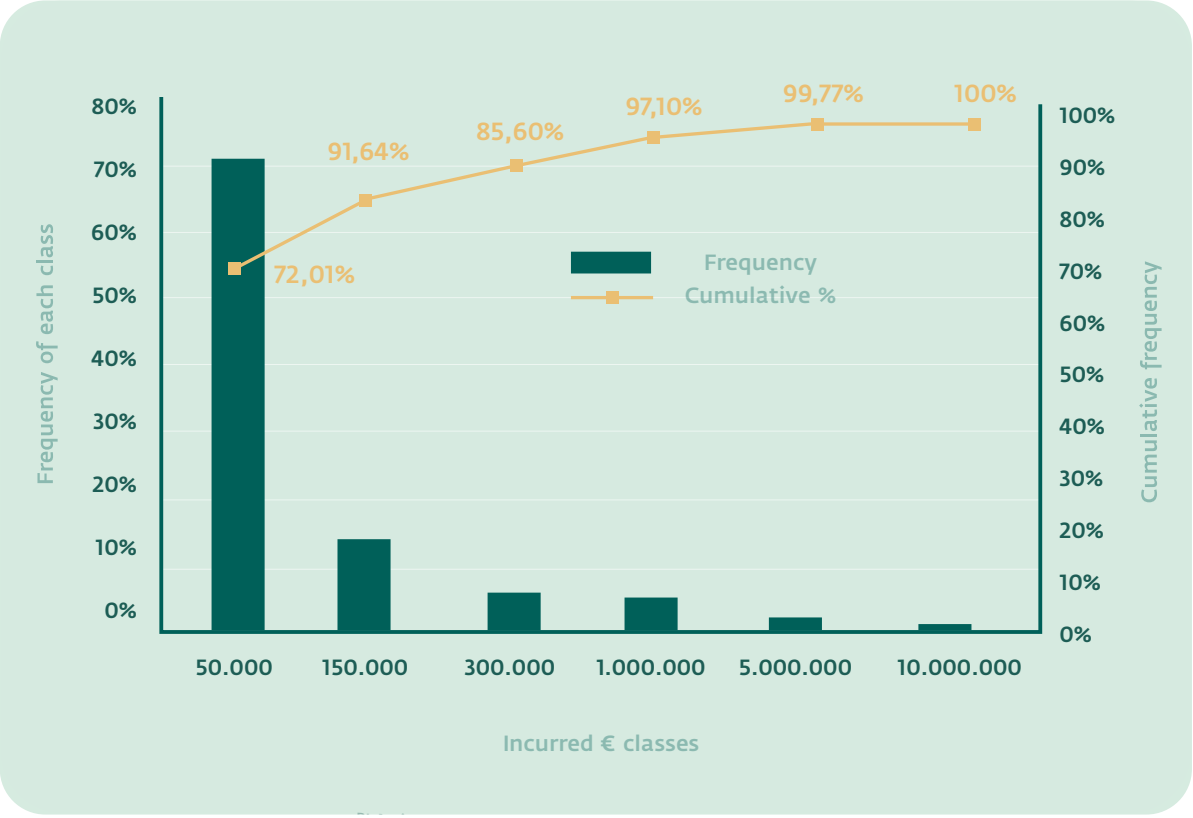


The graph shows the average settlement amount paid by matrix affected and by type of loss / activity. It can be seen that the simultaneous impact on soil and groundwater (very common when the water table is affected) leads to an average settlement of almost €500,000, and an even higher amount, for an impact on the sea. Losses to the policyholder's own assets average almost €200,000 and business interruption losses average more than €450,000. The average cost of preventive measures is €100,000, but it is sometimes difficult to distinguish between the costs of remediation and those of prevention and Emergency Safety Measures (EMS), both for soil and groundwater, as they often involve similar activities, although they are theoretically carried out at different stages of the administrative process.

"It is perhaps not inappropriate to recall that average loss amounts only have statistical significance in large numbers, but cannot and should not be used to estimate the possible loss amount of an individual company."

Figure 3.7 – Distribution by frequency of *incurred claims* (sum of paid and reserved expenses)

The graph shows the percentage frequency by class of the *incurred value* (sum of paid and reserved); for example, in 2.9% of the cases, the *incurred* was over €1 million[37].



37 Value equal to the difference between 100 and the percentage frequency of the class in question (1 M€, 97.1%)

Figure 3.8 – Frequency distribution by *incurred* class (sum of paid and reserved expenses)

The graph shows the average *incurred amount* for the frequency class considered: for example, in 20% of claims, the *incurred* amount was over €100,000, and in 3% of cases it was over €1 million[38].

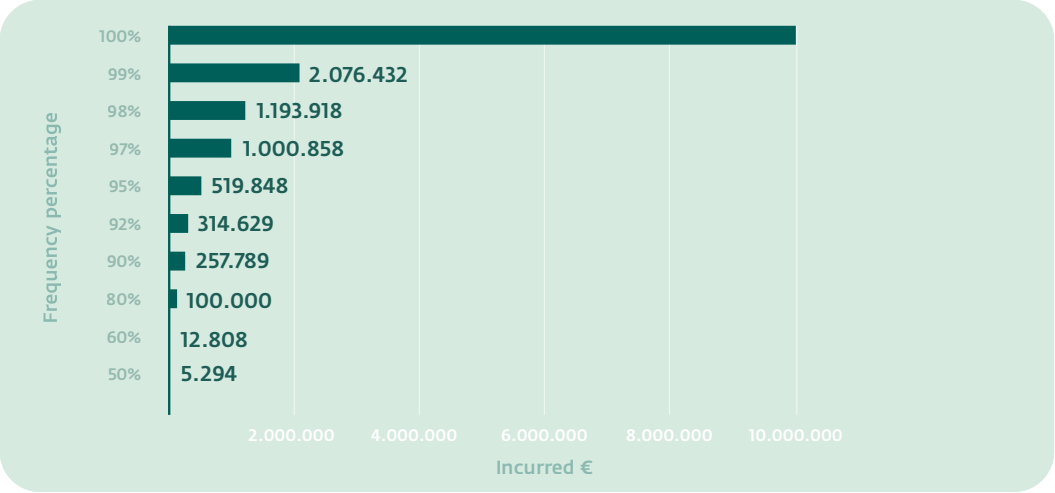
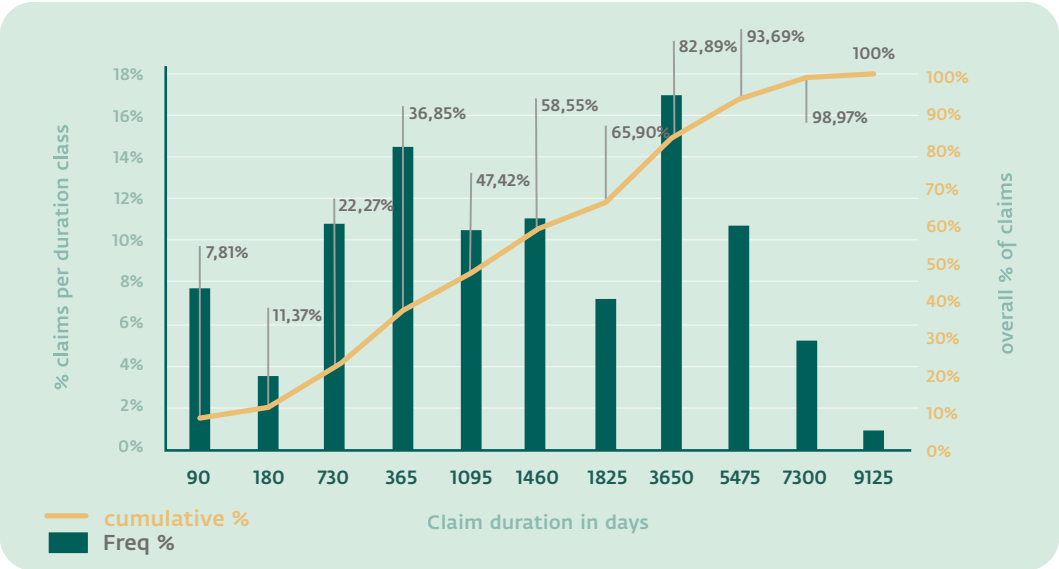


Figure 3.9 – Percentage distribution of claims duration

The graph shows the frequency of the environmental claims duration classes. It can be seen that only about 22% of claims have a duration of less than a year, **over 41% have a duration of more than 4 years (1460 days) and 17% of more than 10 years (3650 days)**



38 Value equal to the difference between 100 and the percentage frequency of the class in question (1 M€, 97.1%)

3.4 Claims/premiums and no claims/co policy ratio

The graph below shows the ratio of new claims to the number of policies per year.

The average claims incidence per policy was between 0.6% and 2.7%, tending to be higher in the period 2000-2008, possibly due to the entry into force in 1999 of the Decree implementing the Ronchi Decree and the Consolidated Environmental Law, Legislative Decree 152/06, and then settled at the lower end of the range.

Figure 3.10 – New no claims/no policy ratio by year

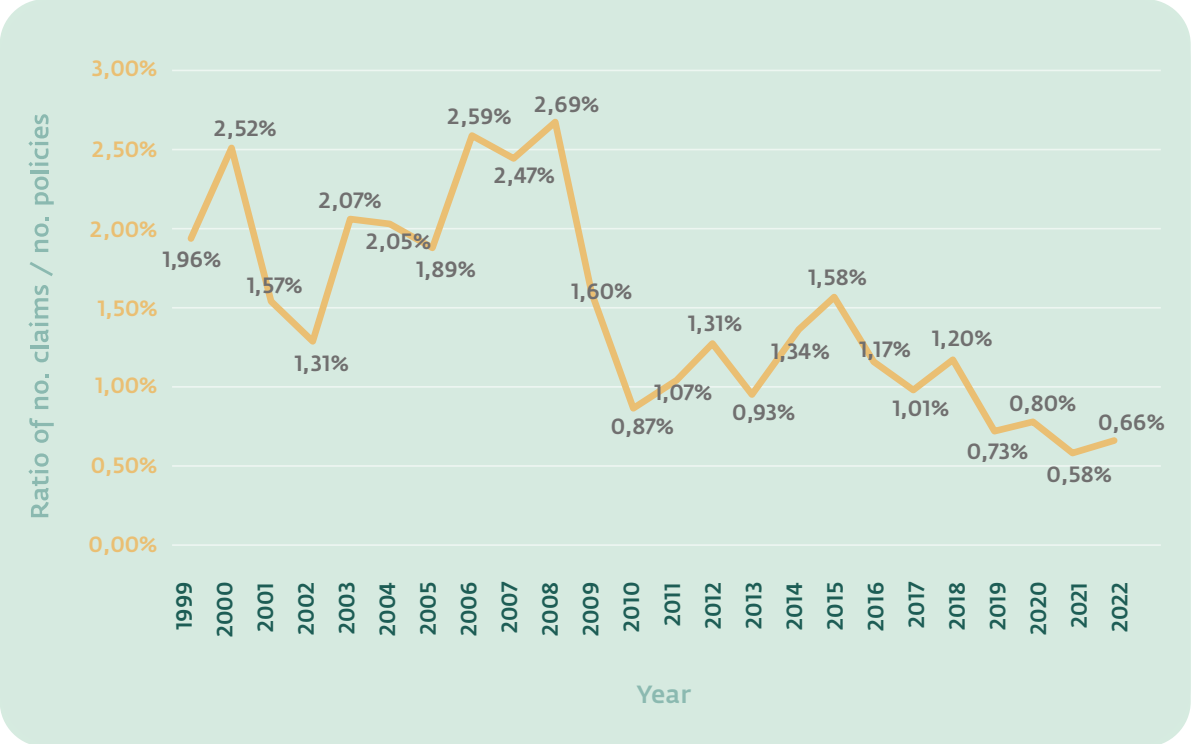
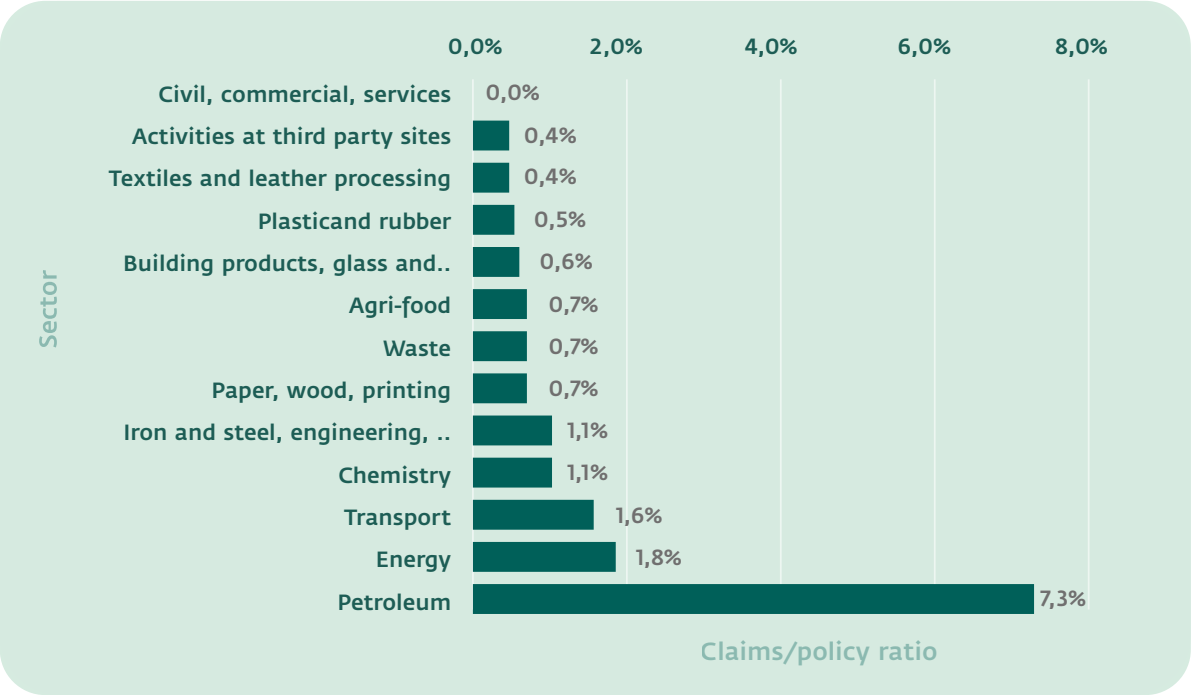


Figure 3.11 – Ratio of no. claims/ no. policies by sector

The graph shows the number of claims compared to the number of policies for the main business sectors over the 20-year period considered. This ratio eliminates the influence of the difference in the absolute number of policies between sectors. It can be seen that the claims ratio per sector averages around 1.1%, with a peak in the claims ratio for the petroleum industry (over 7%) and below average values for the civil, commercial, services sectors, activities at third party sites and the textile and leather sectors.

The high claims ratio in the petroleum sector may be partly accentuated by the existence of individual policies covering dozens or hundreds of sites (think of service stations), but it is certainly largely attributable to old and inadequately maintained underground tanks (integrity checks, vitrification, replacement with double-walled tanks often absent).



39 In this paper, service stations and storage facilities for hydrocarbons have been included in the petroleum sector, whereas for ISTAT statistics they would be part of the retail and wholesale sector (Ateco codes 47.30.00 and 46.71.00 respectively)

Figure 3.12 – Claims ratio by sector

The graph shows the ratio between claims incurred (paid and reserved) and premiums collected over the period considered (2000-2022) for the various business sectors. The extreme variability between the different sectors is evident, with an average ratio of 32%, an iron and steel, engineering and metalworking sector with a claims ratio of 52% and an oil sector with a ratio of 83%.

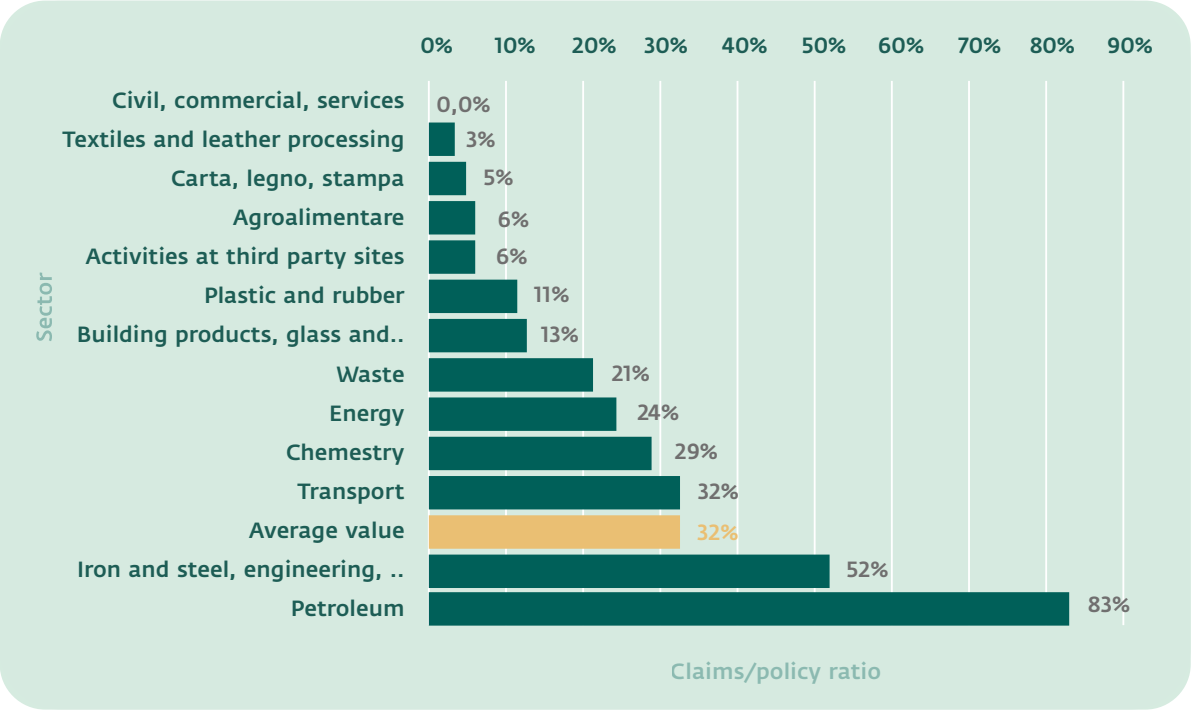
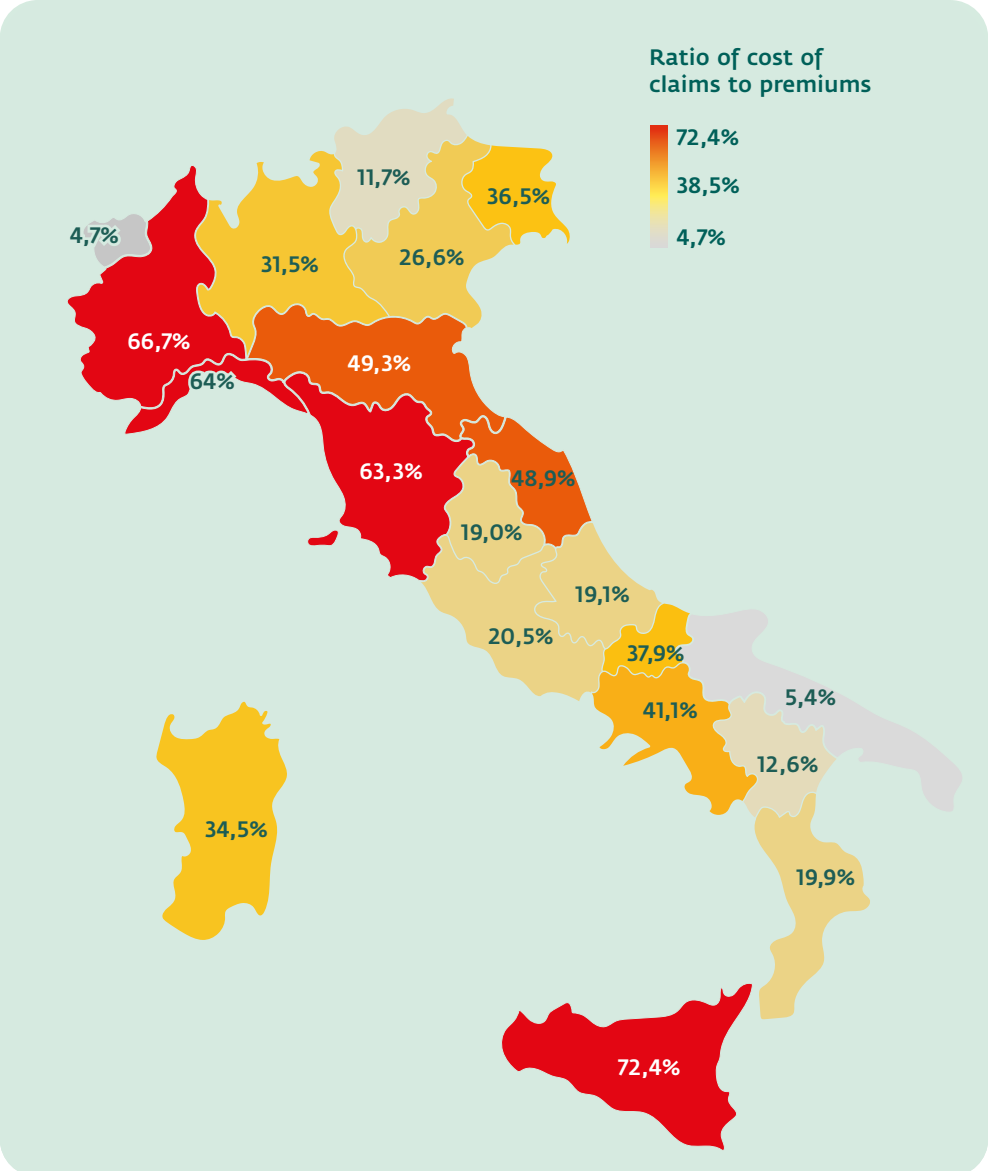


Figure 3.13 – Ratio of incurred claims / premiums by region

The graph shows the ratio of incurred claims (sum of paid and reserved) to premiums collected by region. The figure should be considered qualitatively, as it is influenced by the presence of company policies that may cover several locations nationally, but whose head offices are considered to be in one location; on the other hand, this effect is balanced by the attribution of claims occurring in several regions under one policy to the region where the policy was issued.

The graph shows a higher incurred claims / premium ratio in the centre-north, particularly for Piedmont, Liguria and Tuscany, with the exception of Trentino and Val d'Aosta, which have lower average ratios. In the south, the figure is particularly high for Sicily, which is the southern region with the highest ratio, largely due to the fact that the cost of remediation and disposal is significantly higher than the national average.



ARTICLE

Environmental damage, a case study: a list and analysis of possible consequences – edited by Gabriella Chiellino CEO and Tommaso Magro Manager of the Remediation BU at E-AMBIENTE IMQ

ENVIRONMENTAL DAMAGE: a case study

The site in question, originally owned by Bunge Italia S.p.A. was purchased by ROSSI srl. The site in question is subject to environmental remediation proceedings pursuant to Articles 242 and 252, described in detail in Chapter 3, the entire SNI (site of national interest) of Porto Marghera.

The State has expressed its intention to take legal action against the companies based in Porto Marghera in order to obtain ***compensation for environmental damage*** to cover the cost of constructing the containment and de-pollution works for the entire SNI. In this light, even the 'owner who is not guilty' of the pollution (which in the present case has clear and unequivocal connotations of historical pollution) is held responsible for the *careless custody* of the property by failing to prevent the polluting emissions from continuing.

Without entering into the merits of purely legal issues, this paper will address the subject of *environmental damage* by providing useful information on the settlement hypothesis that the party concerned is required to submit to the MATTM with a view to closing any pending administrative proceedings relating to the environmental proceedings in *question.*

LEGISLATIVE DECREE 152/2006 AS AMENDED PART VI TITLE I: GENERAL PRINCIPLES

The provisions of Part Six of Legislative Decree No. 152/2006 (Article 298-bis) apply to environmental damage caused by:

- Any of the activities listed in Annex 5 to Part Six and to any imminent threat of such damage arising from those activities;
- Activities other than those listed in Annex 5 to Part Six and to any imminent threat of such damage arising from those activities, in the case of intentional or negligent conduct.

In any case, the following types of intervention related to the remediation of polluted sites, provided for in Title Five of Part Four of Legislative Decree No. 152/2006, remain governed by the specific regulations regarding:

- Soil and subsoil remediation, designed and implemented in accordance with the principles and criteria set out in point 2 of Annex 3 to Part Six;
- Groundwater remediation designed and implemented in accordance with point 1 of Annex 3 to Part Six, or for contamination prior to 29 April 2006;
- Groundwater remediation that achieves the quality objectives within the time frame specified in part three of Legislative Decree no. 152/2006.

MINISTERIAL COMPETENCIES

The functions and tasks of the State with regard to the protection, prevention and remedying of environmental damage are the competence of the Ministry for the Environment. Ministerial action is normally carried out in cooperation with the regions, local authorities and any other public body deemed appropriate.

DEFINITION OF ENVIRONMENTAL DAMAGE

The definition of 'environmental damage' in Art. 300, objectively delimits the scope of application of Part Six of Legislative Decree No 152/2006.

In general terms, **environmental damage** is '*any significant and measurable direct or indirect degradation of a natural resource or the benefits derived from it*'.

Specifically, environmental damage is the deterioration, compared to the original conditions caused to:

- protected species and habitats and natural areas;
- inland waters;
- coastal waters and those of the territorial waters;
- the soil.

PRECAUTIONARY PRINCIPLE

According to the precautionary principle of the European Community (Art. 301(1) and (2)), *'a high level of protection must be ensured in the event of dangers, even if only potential, to human health and the environment*', and the application of this principle concerns *'the risk that can in any case be identified following a prior objective scientific assessment'*. Therefore, when there is a risk to human health or the environment (Art. 301(3) and (4))

- The operator concerned must immediately inform the municipality, the province, the region and the Prefect, who must in turn inform the Ministry of the Environment within 24 hours;
- the Ministry of the Environment may at any time take preventive measures, which must be:
    - proportionate to the level of protection to be achieved;
    - non-discriminatory in their application and consistent with similar measures already adopted;
    - based on an examination of potential benefits and costs;
    - updatable in the light of new scientific data.

PREVENTIVE ACTION

Art. 304 provides that where environmental damage has not yet occurred, but there is an imminent threat of it occurring, the operator concerned must:

- take the necessary preventive and safety measures at his own expense within 24 hours;
- prior to such action, notify the municipality, the province, the region and the Prefect, who will inform the Ministry for the Environment within 24 hours.

The notification sent to the authorities must include all aspects of the situation, in particular the personal details of the operator, the characteristics of the site concerned, the environmental matrices likely to be affected, and a description of the action to be taken. The operator is authorised to carry out the interventions as soon as the notification has been received by the local authorities.

If the operator does not carry out the interventions and does not send the notification to the supervisory authority or, in any case, ' the Ministry of the Environment shall impose an administrative fine of not less than one thousand Euro and not more than three thousand euros for each day of delay.

If the operator does not comply with the obligations described above, or does not adopt the measures prescribed by the Ministry, or if he cannot be identified, or if he is not obliged to bear the costs, the Ministry for the Environment may directly take the necessary measures to prevent the damage and approve the costs, with a right of recourse against the person who caused or contributed to causing the costs, if that person is identified within five years of the date of payment.

ENVIRONMENTAL REMEDIATION AND IDENTIFICATION OF MEASURES FOR ITS IMPLEMENTATION

In the event of environmental damage, the operator must (Art. 305):

- immediately inform the municipality, the province, the region and the Prefect, and, where appropriate, other competent State authorities, however concerned;
- immediately take:
  - All practicable steps to control, contain, eliminate or manage the damage factors, in order to prevent or limit further damage, also on the basis of instructions from the competent authorities;
  - the necessary remediation measures referred to in Article 306;
- Submit the possible measures that he has identified for environmental remediation to the Ministry of the Environment for approval within 30 days of the occurrence of the event.

In cases where the operator does not fulfil his obligations, cannot be identified or is not required to bear the costs, the Ministry for the Environment may directly carry out the remedial measures and approve the costs, with a right of recourse against the person who has caused or in any case contributed to causing the costs, if he is identified within five years of the date of payment.

With regard to environmental remediation, it is specified that, in accordance with Art. 306, it is up to the operators to identify the possible environmental remediation measures in accordance with Annex 3 of Part VI and to submit such a proposal to the Ministry of the Environment for approval (unless the latter has already implemented the urgent measures referred to in Art. 305, paragraphs 1 and 2).

Remediation measures must therefore be approved by the Ministry of the Environment before they can be implemented.

ART. 306-BIS. ESTABLISHING MEASURES FOR THE COMPENSATION OF ENVIRONMENTAL DAMAGE AND THE REMEDIATION OF SITES OF NATIONAL INTEREST

The party subject to the reclamation proceedings may submit a settlement proposal pursuant to paragraph 1 of Art. 306-bis.

The settlement proposal:

- Shall identify primary, complementary and compensatory remediation measures;

- where it is formulated for compensatory redress, take into account the time required to achieve the primary or primary and complementary remediation objectives;
- where the resource-resource and service-service criteria are not applicable to the determination of complementary and compensatory measures, it includes a lump sum compensation based on an economic assessment;
- in any case, provides for a monitoring and control plan where the failure of primary remediation results in residual pollution that poses a risk to health and the environment;
- takes into account the remediation works already approved and implemented pursuant to Title V of Part IV of this decree;
- where several parties are involved in causing the damage and in the remediation obligations, it may also be formulated by only some of them with reference to the entire obligation, without prejudice to recourse against the other parties;
- contains an indication of appropriate financial guarantees.

The settlement proposal will be declared admissible or rejected by the Ministry of the Environment if it does not meet all the requirements described above. If the settlement proposal is declared admissible, it will be submitted for the opinion of the entities concerned in a special CdS (decision-making meeting) which shall, within 180 days of its convening, approve, reject or modify the settlement proposal.

SITE REMEDIATION PROCESS

Being located within the perimeter of the Porto Marghera Site of National Interest (Dec. 23/02/2000 – Dec. 24/04/2013 – Dec. 22/12/2016), in accordance with the provisions of the Masterplan for the Reclamation of Porto Marghera, environmental characterisation activities were activated on the site in question, with the aim of providing a complete picture of the contamination in Porto Marghera.

ENVIRONMENTAL CHARACTERISATION OF THE SITE

The environmental characterisation of the site was carried out with the implementation of a series of boreholes and piezometers to verify the quality status of the environmental matrices, soil, subsoil and groundwater as required by document 1).

Based on the results and the responses provided to the authorities, the environmental baseline of the area confirms the absence of soil contamination at the site. On the other hand, with regard to the groundwater section, the Company also found limited exceedances of the thresholds for iron, arsenic and manganese, supplemented by nickel and 1-2-dichloropropane, which were detected by ARPA as part of the adversarial and validation activities.

SITE-SPECIFIC RISK ANALYSIS

ROSSI srl submitted the document referred to in point 6) of Section 3.1, which includes, inter alia, the site-specific risk analysis of the area.

This risk analysis demonstrated the complete absence of risk and/or danger to human receptors in the area and also identified the Venice Lagoon as the only potentially sensitive receptor due to the possible migration of contaminated groundwater towards the canals of the lagoon.

The risk analysis was considered approvable by the MATTM in the CdS (decision-making meeting).

With the exception of the risk to the human receptor, the persistence of the risk to the "Venice Lagoon" receptor has been overcome by the implementation of the retaining wall works and, pending their completion, by the MISE works described below, which complete the remedial measures planned for the case in question.

EMERGENCY SAFETY MEASURES PENDING COMPLETION OF THE RETAINING WALL WORKS

Emergency safety measures include the extraction of water from 4 piezometers and its disposal as waste. The periodic monitoring and verification of the concentrations of the main pollutants identified during the environmental characterisation (arsenic, iron, nickel, manganese, 1,2-dichloropropane) is foreseen. This is linked to the exceedances of more than 10 times the CTCs for the protection of the Venice lagoon.

Monitoring will continue until the completion of the retaining wall works in the affected area.

After submitting the document, the company, Rossi S.r.l., did not receive any feedback from MATTM. Given the simultaneous start of the works for the remediation of the entire plant and, shortly afterwards, the start of the works for the embankment and the restoration of the quay, the MISE works were not in fact activated.

GROUNDWATER REMEDIATION PROJECT

The Remediation Project consists of the implementation of the bank protection works already foreseen in the Masterplan and the integrated groundwater treatment system, known as the Fusina Integrated Project.

This complies with the provisions of the Porto Marghera 2012 Programme Agreement and is expressly stated in the Operational Protocol "*Modalities of intervention for the reclamation and protection of soil and groundwater. Programme Agreement of 16 April 2012 - art. 5, paragraph 5*" as well as with regard to the provisions of the Decision making meeting (conference) subsequently adopted by the MATTM.

In addition, ROSSI srl, together with the Venice Port Authority, has taken steps to secure the necessary resources for the design and construction of the new quay (and associated retaining wall) on the opposite Canale Industriale Sud, as described in more detail in section 4.1, which includes, as well as adding anchorages to the head girder of the existing embankment, the excavation of the sediment wedge in order to ensure a sufficient draft for cargo ships

SETTLEMENT AND COMPENSATORY WORKS

As mentioned in the preamble, in addition to the costs relating to the *environmental damage* caused by its failure to prevent the continued discharge into the lagoon environment of the pollutants found in the groundwater during the period in which it used the area, ROSSI srl was required to contribute to retaining wall works to make the shores of Porto Marghera safe.

It should be noted that the soils at the site did not show any exceedance of the CTC or the natural background values and that the limited exceedance of the CTCs found in the groundwater does not pose a risk to the human receptor as established in the risk analysis considered approvable in the CdS (decision-making meeting).

The persistence of the risk for the 'Venice lagoon' receptor was overcome by the implementation of the defence works.

For these works, ROSSI srl has always agreed to pay the relevant costs, including the amount due for the remediation of *environmental damage*, together with the declaration of adhesion to the PIF system for the treatment of the drained groundwater for these works.

ROSSI srl received a document entitled *Supporting documentation for the agreements concluded with Rossi Srl for the implementation of works to protect the banks and the beds of the canals of Venice - Porto Marghera (Ministerial Decree Environment 23/02/2000)* from the Ministry of Infrastructures and Transport In this document, the State quantified the costs to be borne by the company in connection with the re-

taining wall works and the *environmental damage.* A number of meetings were held between the Attorney General's Office and the company with a view to resolving the existing dispute.

As seen in point 2.3, in fact, art. 306-bis introduces a new discipline in the management of measures for the compensation of environmental damage and the remediation of sites of national interest, effectively placing the burden of submitting a *settlement proposal* on the companies, which is then assessed, approved and/or rejected by the Ministry of the Environment within the framework of the Ministerial Services Conferences (decision-making meetings)

CONTRACT WITH APV FOR THE CONSTRUCTION OF THE NEW QUAY ON THE SOUTH INDUSTRIAL CANAL

On 19.01.2012, ROSSI Srl signed a *Deed of Agreement* with the Port Authority of Venice and Grandi Molini Italiani S.p.a. for the *Design and construction of two new harbour quays in Porto Marghera along the western shore of the West Industrial Canal to serve the production facilities behind them.*

The document in question confirmed the willingness of the companies involved in the work on the lagoon retaining wall and the work to protect the lagoon from the influx of pollutants from the land behind it, to integrate the retaining wall works with the quay works that are functional for production activities.

With this agreement, the companies undertook to pay the Venice Port Authority, which is responsible for the design and supervision of the construction of the new docks downstream of the retaining wall, certain costs related to the design, construction and reinforcement of the quay structures as well as the management of the dredged sediments to ensure sufficient draught for the vessels docking there. The Venice Water Authority, through its concessionaire Consorzio Venezia Nuova, was responsible for carrying out the quayside works to secure the western bank of the Western Industrial Canal.

The agreement to adapt the retaining wall works to the new port quay also includes the payment of the cost of excavating the sediment ditch in front of the works for the part relating to type A sediments, i.e. falling under Table 1 of the 1993 Sludge Protocol, which will be borne entirely by the companies. Any additional costs related to the different destinations of such material, depending on the chemistry of the sediments, will remain the responsibility of the Venice Port Authority.

The costs related to the handling of the sediments dredged from the ditch in the section in front of the ROSSI srl facility, for which the company is responsible, amounts to €303,050.00, as shown in the *Maximum Costs and Breakdowns Table* attached to the Agreement.

In total, ROSSI srl is to be charged approximately € 1,500,000.00 for *quay fittings, dredging and transport* (with the above-mentioned limitations), quay *paving*, *dock tie-rods* (also in connection to the MAV's retaining wall works) and *water drainage network as well as design* costs (the latter already paid).

START OF SETTLEMENT PROCEEDINGS WITH THE ATTORNEY GENERAL'S OFFICE

Several meetings were held between the Attorney General's Office, and Rossi srl and eAmbiente to provide legal and technical assistance to the company. The purpose of these meetings was to define the legal and economic aspects of a possible settlement agreement.

At this meeting, the working procedures were agreed for the rapid completion of the paperwork, which consisted of the submission of a declaration of intent from Rossi srl confirming the company's willingness to participate in the retaining wall works and to pay for the environmental damage only for the period of actual responsibility.

ROSSI srl provided MATTM, and, for information, the MAV and the Venice District State Attorney's Office with all the documents requested, including the aquifer reclamation project, in which the company reiterated its willingness to reach an agreement with the State for the payment of the reclamation costs and the simultaneous declaration of participation in the P.I.F. system.

The Interregional Superintendence for Public Works sends to the District Attorney's Office, and for information to the MATTM, the attached note entitled "*Documentation in support of the agreements concluded with ROSSI Sri for the implementation of the planned works for the protection of the banks and the seabed of the canals of Venice - Porto Marghera (Ministerial Decree Ambiente 23/02/2000)*', which quantifies the costs theoretically to be borne by the company for the payment of the MISE works of the banks and the environmental damage caused by the operation of the site.

The total amount to be borne by the company is estimated at around € 650,000.

FORMALISATION OF THE SETTLEMENT PROPOSAL

In accordance Part IV of Legislative Decree 152/2006, the company then formulates its settlement proposal in order to close the pending legal proceedings related to the reclamation process underway at the Marghera - Venice site.

The company complied with the environmental characterisation obligations for the area, which showed no contamination in the soil and limited exceedances in the groundwater. The approved risk analysis completely ruled out any

health risk to workers from the contaminants detected in the groundwater at concentrations above the relevant CTCs.

The company has complied by submitting the land reclamation project, which is based on the retaining wall of the banks and the drainage, collection and treatment of groundwater, as specifically provided for in the Porto Marghera 2012 Programme Agreement.

The company has also repeatedly declared its willingness to bear the costs of the bank retaining wall works and the P.I.F. system for the collection and treatment of groundwater, although though these have yet to be defined in terms of the supply contract and the associated economic costs.

The company has signed a Deed of Agreement with the Port Authority to participate in the design and construction of works to improve the harbour quay in front of its facility. These works will be integrated with the retaining wall works carried out by the MAV, and in some cases will be carried out by the MAV itself, with specific reference to the tie-rods at the top to ensure adequate support for the bank at the new canal excavation levels, for a total amount of approximately €1,500,000 The company also agreed to bear the cost of excavating the sediments in the ditch in front of the new quay, which amounts to approximately €300,000.00.

In any event, recalling the definition of **Primary Remediation** in Section 2.5, i.e. *any remedial measure which returns the damaged natural resources and/or impaired services to, or towards, baseline condition*, it is acknowledged that the company has:

- Determined the quality status of the site's environmental matrices;
- Verified the absence of soil contamination;
- Verified the exceedances of the CTC for groundwater at the site;
- Verified that there is no health risk to users of the area in relation to these exceedances;
- Presented the Groundwater Reclamation Project, which involves the containment of groundwater towards the Lagoon and its treatment in a purpose-built plant to purify the groundwater of the entire macro-island;
- Declared its willingness to participate in the system of retaining walls, as works for the protection of the Venice Lagoon – also bearing part of the costs to make it functional for the effective use of the bank;
- Declared its willingness to participate in the Porto Marghera P.I.F. groundwater collection and treatment system;

- Signed a Deed of Agreement with the Venice Port Authority for the refurbishment of the quay in front of its facility, including the payment of the dredging costs and the transfer of sediment in order to guarantee the required draught;
- The costs referred to in the previous paragraph are 10 times greater than the environmental damage quantified by the Interregional Public Works Department;
- The additional charges under the aforementioned agreement, totalling approximately €15 million, will involve the complete refurbishment of the landing place and the final placement of the sediments dredged from the West industrial canal in front of it, as well as integrating the functions of the retaining wall works to the actual needs of the frontagers by paying €15 million for installing the tie-rods in the bank protection works carried out by MAV.

In particular, the removal of sediments provided for in the Agreement with the Venice Port Authority constitutes de facto *Primary Remediation* within the meaning of art. 306-Bis of Legislative Decree 152/2006 as amended as an operation that *directly restores natural resources and services to their baseline state in a short period of time*, as a result of the removal of potentially polluting volumes of sediment.

In view of the above, it can be assumed that the Company has already complied with the provisions relating to the reclamation of the site as well as the Primary Remediation of the **Environmental Damage**, and that, therefore, nothing more is owed to the Proceeding Administration in respect of this specific aspect.

With regard to the detection of pollutants in the groundwater of the site that are not directly related to the activities carried out, the company, by determining the natural background values for the groundwater of the drainage basin in the Venice Lagoon, does not consider itself in any way responsible for the contamination found.

Gabriella Chiellino
CEO

Tommaso Magro
Remediation BU Manager at E-AMBIENTE IMQ

3.5 Case studies – Pool Ambiente

Twenty-five years ago, we intervened in a soft drinks production plant owned by a multinational group that was attentive to safety and environmental protection issues. The site had contaminated the water table of a large area of the countryside due to leaks of diesel oil from the underground tank used to heat the warehouses.

In the following years, we visited several other sites, including a fuel depot that regularly tested its underground tanks, with all pipes visible or in tunnels that were easy to inspect. However, the underground tank used to heat the office building was completely neglected in a corner of the site, and had never been inspected.

We also visited a hydroelectric power station; when we asked the safety and environment manager - now common question for us - 'How do you heat the office building? How do you heat the dam keeper's hut?" their gazes wandered into the void. Tanks that were never looked at, forgotten about or even thought to have been removed long ago.

The situation is similar to that of many other sites, even those that have been rebuilt from scratch due to devastating fires, where traces of this type of installation have been lost. There has been little significant change in the last 25 years, despite the entry into force in Italy of one of the strictest and most punctual remediation regulations in the world, the transposition of a European directive and an undoubted increase in the competence of the entire contaminated site remediation sector, both in terms of private consulting companies and inspection bodies.

Occasionally, we saw apparently more careful sites, where, for example double-walled tanks with a continuous leak monitoring system had been installed. Unfortunately, when we asked to see the inspection pressure gauge, we were met with a gaze that wandered off into space, and we were led into a small room full of materials and cobwebs, where we were shown a pressure gauge that was clearly disconnected and had not been looked at for years. At other sites, we discovered that the 'continuous leakage control system' was actually a tank level gauge with an accuracy of fractions of a percentage point.

Such a resolution, which may seem high at first sight, means that, in reality, from a tank that could contain 10,000 litres (which is absolutely normal, indeed medium-small), a few tens or hundreds of litres can be dispersed into the environment unnoticed, or worse, give the illusion of being safe. When you consider that a single teaspoon of a toxic substance can contaminate the equivalent of an Olympic-sized swimming pool, it is easy to see how such leaks can cause serious environmental damage, especially if they continue over time because they go undetected.

"In fact, it is easy to calculate how a single litre of benzene can theoretically cause a contamination plume in the water table approximately 1.5 km long, 200 m wide and 10 m thick[40]!"

3.6 Comments and conclusions

Looking at the above cases and the many similar cases that we have encountered, it is possible to summarise some common features that are of particular interest in relation to environmental damage claims:

1. Normally, one focuses on the risks inherent in the company's core business, without paying attention to the **risks associated with ancillary activities and auxiliary services**, even though they are present on the site, or at least in part of the activity, which, **precisely because they are not managed, may represent the greatest criticality**;
2. The risk of causing **environmental damage** is much broader than just the risk of causing **pollution** and is often not recognised by businesses. Similarly, the possibility of damaging the environment by releasing non-toxic substances or even simply altering their original state (e.g. warm water or nutrients that can cause eutrophication and death of the downstream ecosystem) is often overlooked.
3. The **damage potential** of the sources associated with each company is usually **underestimated**, and it is not realised that while a manager or production technician often thinks in tonnes, the units of reference are usually parts per billion in health and environmental terms: **quantities irrelevant from a production point of view become highly critical from a health and environmental point of view**. It is therefore essential to take into account the different standards that apply production processes with respect to those of health and environmental protection, even when considering the precision and accuracy margins of one's own systems.
4. **Human error** is the largest and most unpredictable variable, and the actual ability to make mistakes exceeds the most creative imagination. Over the years, we have seen, for example, chemicals poured into the wrong tanks, causing explosive chemical reactions, or into tanks that had been aban-

40 As an example, the limit concentration (CTC) of benzene in groundwater is 1 microgram/litre, or one part per billion. This means that, in theory, one litre of benzene has the potential to contaminate 1 billion litres of water, or one million cubic metres, if it is completely dispersed. This means that one litre of benzene is theoretically capable of affecting an area extending over several hectares, or - assuming an average of 30% interstitial space in the ground - a contamination plume in the aquifer approximately 1.5 km long, 200 m wide and about 10 m thick. Just one litre of benzene!

doned because they had already been punctured but without the slightest trace; chemicals pumped into pipes that had been disconnected because they were undergoing maintenance, or into the ventilation ducts of a house because they had been mistaken for diesel fuel pipes; or dumped into tanks that were already full because the level gauge had been misread. We have even seen systems burst because the control room staff thought that the pressure gauge, which had been showing high readings for weeks, was broken. We could write a book with a thousand variations on this theme, the only constant is that **human error is always lurking**, and as Murphy said if it is possible to make a mistake, sooner or later someone will make it;

5. People often delude themselves into thinking that their processes, equipment and procedures are completely safe. In reality, any system can malfunction or fail, and any operator can make mistakes, so it is **always important to have redundant and fail-safe control and safety systems**.

We also find it particularly interesting to point out that **the cost of prevention is typically hundreds or thousands of times less than the cost of remediation**. Suffice it to say that measures to prevent 100 litres of a chlorinated solvent or hydrocarbon from leaking into groundwater through a small perforated tank, for example by converting it to a double-walled tank, could cost € 4-5,000 whereas groundwater remediation could easily cost €5-600,000 and take years to restore.

Today, it is therefore strategic for companies not only to be able to equip themselves with the economic resources to deal with this type of damage, but above all to have experts available who can help them assess their environmental risks in order to better manage them. Insurance companies, with their specific knowledge of this type of risk, can certainly play a key role here in the mutual interest of all parties.

3.7 Proposals for more effective prevention and better management of emergencies and incidents

Given that the prevention of environmental damage is essential for the effective protection of the environment and human health and that it should take priority over any other type of intervention, there are a number of initiatives that we consider crucial in reducing the likelihood and potential consequences of an environmental damage event:

1. Use a specialised consultant to identify and evaluate the sources of risk present at the site and the best ways of managing them, with the aim of both preventing and mitigating possible incidents; encouraging the adoption of truly effective environmental risk management systems such as the PdR UNI 107/2021;

2. Make **maintenance of the main and secondary equipment mandatory, especially corrosion control**, and **environmental training for operational and managerial staff;**
3. Discourage the use of underground tanks and pipes, unless they are double-walled with continuous leakage monitoring;
4. Always have monitoring systems in place to detect potential source anomalies in real time, and redundant controls (i.e. multiple for the same parameter). A few examples are listed her[41]:
   - ◊ Install monitoring systems capable of detecting the gradual loss of efficiency of the treatment system;
   - ◊ Install a monitoring system at the company's waste water treatment plant and in flues to detect non-standard discharges or emissions;
   - ◊ Install thermal imaging cameras for the early detection of possible fire triggers, fire sensors and automatic extinguishing systems, install fire fighting water collection tanks and prevent it from seeping into the ground or, worse, into piezometers, wells, sub-irrigation systems;
   - ◊ Provide pipe coupling and dispensing systems that prevent incorrect coupling by the operator, delivery to the wrong location and overfilling;
5. Establish agreements with emergency response companies so that qualified and trusted professionals can intervene at short notice in the event of an emergency, and that their contact details are known to in-house emergency response personnel;
6. Take out an environmental liability policy and let you your insurer assist you through the various stages of managing the claim and, where appropriate, prevention and mitigation at source.

41 A more organic and comprehensive list can be found in the UNI/PDR 107/2021 standard, which is dealt with in the following chapters.

4. THE NEW "PROTECTED ENVIRONMENT" CERTIFICATION (PdR UNI 107:2021)

AMBIENTE PROTETTO

4.1 Why a new environmental certification is needed

Business certifications are tools that allow consumers and other stakeholders to verify that a company, product or service meets certain standards.

Meeting the standards required to obtain and maintain certification is a tool for improving the management of a company, the quality and efficiency of its production processes and its reputation.

With regard to environmental issues, there are various types of certification, which can cover a product (e.g. Ecolabel), a process (EMAS), the environmental footprint (Carbon Foot Print), the company management system (ISO 140001), the energy management system (ISO 50001), the environmental performance (BREEAM protocol) and the energy performance of a building (LEED protocol), etc.

In 2019, Pool Ambiente carried out an analysis of accidents reported and handled between 2000 and 2019, which showed that:

1. Environmental damage events can be traced back mainly to the following 7 risk scenarios:
   - ◊ Fire;
   - ◊ Underground tanks;
   - ◊ Underground and above-ground piping;
   - ◊ Above ground tanks;
   - ◊ Plant, storage and handling areas;
   - ◊ Atmospheric emissions;
   - ◊ Industrial waste.
2. Almost all of the accidents that occurred could have been easily avoided with very little cost or intervention. In particular, **most of them were due to a lack of simple maintenance or human error.**

The next step was to look at how existing standards and certifications dealt with the issue of maintenance, and significant shortcomings were noted. In other words, **the companies often complied with the applicable regulations, but the problem identified was that the aspects that caused the damage were not regulated.**

For example, underground tanks, while undoubtedly identified by workers as a major source of soil and groundwater contamination, are not regulated or certified for operation and maintenance, and are often not even subject to AIA or RIR[42] authorisation requirements. At best, there are the manufacturer's instructions or guidelines such as those published by ARPA Lombardia[43], with all the limitations we have already seen.

The usefulness, and indeed the need, for a reference tool that summarises in a clear and detailed manner the prevention and mitigation measures that could prevent or at least significantly mitigate an environmental damage event, applicable to the

42 AIA: Integrated Environmental Authorisation; RIR: Major Accident Hazard or Seveso
43 ARPA Lombardia, LG.BN.001 rev. 0 of 15/03/2013

extreme variety of existing installations and aimed in particular at correcting the main causes of damage previously identified, has therefore emerged.

With these premises, in 2021 UNI – Ente Italiano di Normazione - published the Reference Practice UNI PdR 107:2021 *"Protected Environment - Guidelines for the prevention of damage to the environment - Technical criteria for effective environmental risk management"* (hereinafter PdR or Practice), the first standard in the world on the subject of environmental damage prevention. Because of its pioneering nature, it was created as a 'reference practice', with the prospect of becoming a technical standard after five years of publication, subject to possible modifications and improvements.

The drafting of the Practice was promoted and led by Pool Ambiente, with the valuable support of the other members of the Technical Committee: TUV Italia, Ramboll, Alfa Cincotti, Belfor Italia and Igeam, and the support of: ISPRA, ANIA, ANRA, Bocconi University, The Polytechnic University of Milan, CINEAS, AIBA, Altroconsumo, Unione Consumatori, ARPA Emilia-Romagna, Bologna Metropolitan City, Sodalitas Foundation, Lifegate Consulting, and all the companies belonging to Pool Ambiente.

The practice can be integrated with existing certifications (in particular ISO 14001 and EMAS), where they exist, with an effective synergy. It **can be downloaded free of charge** from the following link on the UNI website

4.2 Description and structure

The UNI 107:2021 Reference Practice is based on the prevention of environmental damage and the mitigation of the consequences of damage. It includes a set of detailed criteria divided into three groups, according to the complexity and cost of the interventions / activities required and the additional level of protection provided, corresponding to three successive levels of certification: Basic, Intermediate and Advanced.

Each level of certification is achieved by meeting a set of mandatory requirements for that level and is verified through audits by an accredited certification body.

The practice, with a few exceptions[44], can be implemented by organisations in any production sector, in production and/or storage sites of any size. Certification lasts three years, includes annual monitoring and is site specific.

The Practice is divided into two parts: the first sets out the requirements applicable to all areas, and the second sets out the specific requirements for individual risk scenarios

44 Reference Practice UNI EN 107:2021 does not apply to:
- emissions of civil, domestic and similar effluents;
- national, regional and local pipeline systems for the transport and distribution of gas, as regulated by ARERA;
- oil pipelines used for the transport and distribution of hydrocarbons from / to refineries
- gas storage;
- tanks and vessels used for the permanent storage of waste.

General Part

This part describes how to develop the system aimed at preventing damage to the environment by:

- Identifying the sources of risk present (assessing those present among the sources listed in the previous section);
- Defining the Source-Pathway-Target model;
- The assessment of the vulnerability of targets, according to models proposed by the practice, in order to understand the sensitivity of the surrounding environment;
- The analysis, assessment and treatment of risks and the management of residual risks;
- Confirmation of regulatory compliance;
- The training of practical training of operational and managerial staff;
- Emergency management;
- The prevention of malicious acts;
- Insurance transfer of residual risk;
- The definition of roles and responsibilities within the organisation in relation to the implementation of the practice, and the definition of human, technological and financial resources; communication protocols; and auditing, review, evaluation and improvement systems.

Specific Part

The specific part consists of five annexes, which cover:

Appendix A – Operational requirements for each scenario.

The practice requirements are given, divided into mandatory (basic level) and additional (required for intermediate and advanced levels), for each of the 7 risk scenarios.

The requirements are listed in a check list, with the following information for each:

- Item (numbering) – specific reference to the requirement according to progressive numbering;
- Process phase – the requirements cover all phases of the life of an installation, from design to decommissioning;

- Requirement – summary description of the requirement;
- Reference documentation – documentation used to verify the requirement;
- Indicator – indicates which parameter to consider when checking whether or the requirement has been met or not;
- Classification – indicates whether the requirement is mandatory or additional;
- Detailed description of the requirement and how it will be implemented;

Appendix B – contains calculation methods for assessing the vulnerability of targets according to the specific context in which the site is located, based on geological and hydrogeological data, proximity to surface water bodies, proximity to sensitive targets (nurseries, hospitals, residential areas etc.). The vulnerability assessment, required by the practice, allows management to understand the environmental context in which the installation is located.

Appendix C – provides guidelines for the third party validation procedure of the practice.

Appendix D – contains the audit checklist to verify the correct application of the practice and the level of enforcement. The certification level Basic, Medium, Advanced is specified for each requirement.

Appendix D – shows the correspondence between the items in this practice and UNI EN ISO 14001/2015.

4.3 How the practice is implemented

As with all other certifications, the implementation of the UNI 107:2021 Reference Practice is a process that involves a series of steps, corrections, revisions and milestones to be reached, which we could compare to a 'journey'.

A journey that, along the way, allows us to better understand and manage our own environmental risks and the damage that our own activities can cause to the environment, with the aim of concretely preventing the possibility of an event that could cause environmental damage and, in the worst case, limiting the possible consequences. As with all journeys, it is nice to be able to share the experience. This is also part of the purpose of Practice, to demonstrate the company's concrete commitment to preventing environmental damage at its production or storage facilities – and therefore also enable consumers to choose a company that takes environmental protection seriously as a priority. Before you set off, it may be useful to carry out a *gap analysis* to assess how far you are from meeting the requirements, so that you can set a realistic duration and budget for the trip.

The next, managerial, step is then to identify the economic and organisational resources, in particular the team that will be in charge of getting to know the PdR, guiding the company through all the subsequent steps , involving resources, finding and consulting documents, proposing interventions, monitoring and evaluating processes, etc. In particular, it will be necessary to:

- Designate the person responsible for the system and the resources needed to establish, implement, verify compliance, maintain and continually improve the system;
- Appoint an environmental response team;
- Appoint the person responsible for internal and external communications;
- Appoint the team responsible for plant maintenance.Per tutte queste figure deve essere predisposto e monitorato un idoneo piano di formazione/addestramento teorico/pratico sulle tematiche ambientali che riguardi la normativa, i potenziali danni all'ambiente, gli aspetti di prevenzione e mitigazione, la gestione ordinaria e delle emergenze.

An appropriate theoretical / practical environmental training plan should be prepared and monitored for all these roles, covering legislation, potential environmental damage, prevention and mitigation aspects, routine and emergency management. The first step is to identify which of the seven risk scenarios are relevant to the company. A Source-Pathway-Target model is then developed for each one, i.e. for each risk scenario it is necessary to assess the pathways that the various substances could take in the event of an accident and the environmental receptors they could reach.

Targets can be both internal and external to the site and can be summarised as follows:

- Soil;
- Surface water bodies;
- Underground water bodies;
- Protected natural habitats, protected areas;
- Protected species;
- Human receptor.

The latter is included in the list of possible targets of an environmental impact even though, strictly speaking, it would not be included in the list of possible receptors of environmental damage under current legislation. In fact, however, the human receptor is already implicit in the threshold values for acceptability of an impact on certain environmental matrices. Consider, for example, that the assessment of damage to soil and groundwater is defined by comparing the concentrations of pollutants detected with general and site-specific reference values (CTC and RTC[45]), which are essentially based on the assessment of the risk these substances pose to human health.

The vulnerability of each receptor also has to be assessed. This consists of assessing the likelihood of the target being affected and the severity of the damage it may suffer, in accordance with the criteria set out in Annex B.

Once the above steps have been completed, the scope of the system is defined, which specifies the boundaries within which the environmental damage prevention system will operate. The scope of application should specify the following:

- The site to be certified;
- The activities carried out at the site;
- The risk scenarios present at the site.

To support decisions in the area of activity planning, once the potential sources of environmental damage have been identified and the source-pathway-target models have been defined, a risk analysis is carried out to assess the likelihood of an event occurring, the consequences of the event, the nature and magnitude of the consequences and the time horizon within which the assessments are made.

Once the risk scenarios and possible consequences have been defined, an assess-

45 Legislative Decree 152/06, Art. 240(b), (c) defines these as follows:
CTC – Contamination Threshold Concentrations: levels of contamination in environmental matrices that represent values above which the site is considered potentially contaminated and a site-specific risk analysis is required [...]
RTC – Risk Threshold Concentration: levels of contamination in environmental matrices, to be determined on a case-by-case basis through the application of a site-specific risk analysis procedure [...] and based on the results of the characterisation plan, above which safety and remediation measures are required. The concentration levels defined are therefore those acceptable for that site and those specific conditions of use.

ment is carried out to eliminate existing sources of risk or replace them with sources of lower potential impact. For remaining sources, a risk mitigation plan will be implemented to identify actions to be taken to manage and mitigate residual risks.

A further step is to verify the use of best available technology (BAT) and compliance with regulations, which are not specifically audited for certification, but compliance with which is an essential prerequisite for obtaining and maintaining certification.

The final steps are to implement a system for monitoring, evaluating and measuring performance in terms of environmental damage using the indicators in Annex A of the Practice and to identify corrective and improvement actions that can be taken.

In order to obtain UNI PdR 107:2021 certification, the requirements listed in Annex A must be met for the level of certification required. If the requirements are still not met, an assessment of the actions to be taken to meet the missing requirements should be carried out, identifying the roles to be involved, the economic resources to be committed and the estimated time frame.

Once compliance with all requirements has been verified, an accredited certification body will invited to complete the certification process through an audit, after which a certification may be granted.

4.4 Application example

Pool Ambiente, as the entity that conceived and promoted the Practice, and in accordance with its objectives of promoting the culture of environmental damage prevention, has made itself and will continue to make itself available to assist the companies insured by its members in the implementation of the UNI PdR 107:2021 Reference Practice. With this in mind, it is assisting a multi-utility company with the certification process.

The first *step* was to clarify in detail the structure of the practice, the interactions and synergies with the corporate structure and procedures and with any existing certifications.

The project to implement the Practice was presented to the *Management* and a pilot site was identified with a view to replicating the certification at other sites once experience had been gained, thus starting the process of group certification.

A *gap analysis* was then carried out for the sources of risk at the pilot site, regarding the basic level, using a three-colour rating system:

- **Green –** the requirement is met and the documentation is complete and available (may exist as documentation for other certifications, e.g. ISO 14001);

- **Amber –** the requirement is met but specific reference documentation is missing / the requirement is not met but minor adjustments are sufficient;
- **Red –** the requirement is not met and specific action is required.

The results of the *gap analysis* were shared with Pool Ambiente, which helped the company identify possible alternatives to close the gaps that had been identified. This involved the preparation of an operational document outlining the actions to be taken, the priorities for action, the identification of the people to be involved and the economic resources to be committed.

Following an initial series of improvement actions, a site visit was carried out with the Pool Ambiente to review the identified risk areas and their management.

The process continued with the involvement of an accredited Certification Body for a *Readiness Survey*, at the end of which some observations and recommendations were recorded.

The company is currently in the process of completing these activities and at the end of this phase, it will schedule the verification activities for certification with the organisation.

4.5 Potential reduction of cases of environmental damage in Italy

In order to assess the practical usefulness of applying the practice, claims for which sufficient documentation was available were analysed to understand whether the claim would have been avoided if the criteria of the practice had been applied.

This analysis led to an estimate that approximately 73% of claims could have been avoided by applying the 'Protected Environment' Practice.

This is by no means a happy coincidence, but essentially depends on the following interrelated factors:

- Origin of the practice: the practice was implemented on the basis of an analysis of claims in order to identify criteria that could have prevented the claims themselves. The fact that most of these could have been avoided by applying the practice is therefore a natural consequence of this method of implementation;
- Main causes of accidents: as highlighted in this document, **the main causes of accidents are inadequate corrosion control, inadequate maintenance and human error**. For these reasons, the Practice revolves around the monitoring and control of corrosion, the implementation of effective and verifiable maintenance plans and the training of personnel, both operational and managerial.

4.6 Benefits of implementing the practice

In our opinion, there are numerous advantages for a company that implements the UNI PdR 107:2021 Reference Practice. The first, more incidental, is undoubtedly to raise awareness of the risks and potential damage that one's own activities can cause to the environment, and how fundamental the culture of prevention is. This is why, for example, a source-pathway-target overview and an analysis of the vulnerability of the surrounding targets are required: carrying out an industrial activity in a fertile and inhabited plain, on the coast, or conversely in a rocky and uninhabited desert obviously has a different potential for causing environmental damage.

However, the benefits of applying the practice certainly go much further and can be summarised as follows:

- Dramatically reducing the likelihood of environmental damage occurring and in the severity of any accidents that do occur;
- The guarantee of being able to deal with the repair of any damage that may occur, and therefore protecting the company's assets and business continuity from the economic impact of the remediation and/or environmental restoration work and related damages, which as we have seen are numerous and go far beyond "simple" environmental damage; less risk of environmental damage also means less risk of damage to the company's image, which in turn can have serious consequences for the company such as loss of market share, mistrust among investors and loss of qualified human resources;
- Improvement of its reputation with consumers, **stakeholders** and supervisory bodies, by actively working to prevent environmental damage events;
- Improvement of the sustainability of the company and its ESG rating, with the additional positive effects that this in turn brings;
- Improvement of the conditions of the existing environmental policy.

4.7 Proposals for effectively promoting the practice

The most effective way to promote a product or service is to show the benefits that those who already own the product or already use the service have.

Considering that the UNI PdR107:2021 Reference Practice aims to safeguard the environment by reducing the number and severity of events that cause damage, basically by intervening in prevention and training activities, it is very complicated to make a non-accident or a non-damage evident.

> "This is unfortunately a very common problem with prevention: investing time and economic resources to eliminate a problem and succeeding in doing so can create the false illusion that the problem did not exist – and no longer exists."

The question therefore becomes: have I never had environmental problems because I am virtuous or because things have gone well for me (so far)? Have I never caused damage to the environment because I am fully aware of the risks and manage them as best I can, or have I just been lucky, is my risk coefficient high but I don't realise it?

If this is true within a site for its management, it is even more so outside, where only the possible negative consequences of an incident are visible, and not what was done to prevent it from happening.

The Practice was drawn up with the specific aim of making a visible a commitment that otherwise, precisely because it is effective, would remain confined within the perimeter of the site and would not be known to the outside world. By obtaining the certification 'label', a company can communicate to its customers the attention it pays to prevention, which would otherwise go unnoticed, and allow them to make choices based also on this important criterion.

From this point of view, it would certainly be useful to carry out a campaign to explain the meaning and importance of the practice to customers.

In general, however, it is clear that the prevention of environmental damage is first and foremost a cultural issue. It would be extremely important to spread this culture at all levels, involving an increasing number of actors, starting with those already working in the environmental and sustainability sector, but also those involved in health and safety, trade associations, public bodies, certification bodies, scientific disseminators, etc., right down to the operator in the company or the end consumer.

Other incentives for the development of this practice, i.e. the acknowledgement of those who make a real effort to prevent environmental damage, could come from:

- tax relief, tax credit;
- increasing the duration of authorisations (e.g. AIA or AUA), reducing the number of inspections, reserving resources for inspections of those who do not have this focus on prevention;
- scoring systems for public procurement (green procurement);
- improving ESG rating.

5. ENVIRONMENTAL LIABILITY POLICIES IN ITALY

5.1 Introduction to environmental liability policies: brief history and types of cover

Insurance cover for environmental risks developed after the Second World War in the context of civil liability and, in particular, as cover for damage caused to third parties following the release of pollutants. Indeed, environmental risks were excluded from general liability policies, there were no clean-up or remediation obligations and the principle of compensation for unjust damage to third parties (art. 2043 of the Italian Civil Code) was applied. On 10 July 1976, the Seveso disaster occurred and changed everything. This environmental accident, caused by the release and dispersion of a cloud of dioxin[46], one of the most toxic man-made substances, from the ICMESA chemical plant in Meda, had a devastating impact on the environment, the population and public opinion. In the aftermath of this accident, various institutions and trade associations mobilised, even across national borders, to find solutions, not only to prevent such accidents, but also to find ways of repairing the consequences of such accidents.

As a result of this increased attention to environmental issues, the 'Pool for Pollution Liability Insurance' ('Pool Inquinamento') was created in 1979 on the initiative of ANIA and Confindustria. The Pool's aim since its foundation has been to contribute to the protection of the environment, natural resources and the health of citizens by providing ad hoc insurance cover for environmental risks with appropriate limits.

Given the catastrophic nature of environmental risks, the mutuality of a co-insurance pool has enabled a large number of companies to operate in this sector over the years, being able to rely on specialised staff in both risk assessment and claims management as well as strong financial soundness.

Another turning point came in 1997 with the publication of Legislative Decree 22/1997 'Ronchi', which introduced the obligation for emergency safety measures and remediation in the event of soil and groundwater contamination exceeding strict limits indicated in tables. This regulation introduces important additional obligations with regard to third party liability and, as a result, new policy wordings have been developed to cover interventions carried out within the company's own boundaries and outside the scope of 'rescue costs' or anyway third party liability.

A further turning point came with the publication of Directive 2004/35/EC transposed in Italy by Legislative Decree 152/2006 as amended, which formally introduced the concept of environmental liability in addition to civil liability.

The insurance industry has responded with new, extended policy wordings that operate on the basis of the mechanisms provided for in the regulation, providing, for example, for the activation of the policy even in the event of self-reporting by the company to the authorities, i.e. without a claim by the injured third party.

46 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD)

Despite the development of dedicated, stand-alone insurance products, there is still a specific extension for accidental pollution within the scope of General Liability policies. However, this extension, which is still included in most insurance policies, provides a very limited coverage of a company's environmental liability, both in terms of the amount, which is generally quite low, and in terms of the wording, which provides coverage only for damage to third parties, usually only for sudden events and sometimes only in the context of certain sub-categories of damage (e.g. plant and pipe breakage).

Today, the Italian insurance market is very buoyant, with an increasing number of insurance companies active in the sale of environmental liability policies, despite the fact that demand for this type of cover is still too low.

The most innovative environmental liability products are those that not only cover pollution but also any kind of deterioration of natural resources, as required by Italian and European legislation.

Pool Inquinamento, in order to reflect this paradigm shift and new legislation, changed its name to Pool Ambiente in 2018.

5.2 Guaranteed offered

Italy has been developing ad hoc insurance products to cover the risks of environmental damage since 1979, when Pool Ambiente was founded. Today, there are more than 20 insurance companies that providing this type of cover in the Italian environmental insurance market.

Professional reinsurers also participate in this type of risk, contributing to the large capacity in the market. In the case of Pool Ambiente, the capacity available for each individual policy issued was €50 million in 2021 and is €62 million as of 2023.

The wide range of environmental damage policies is also reflected in the wording of the various reference texts, which generally provide very broad guarantees suitable for insuring the environmental liability of companies of all types and sizes.

In particular, with reference to Pool Ambiente, two types of wording are available, one tailor-made to suit the needs of each type of company and the other standard designed for SMEs. The validity of these policies is extended to the territories of the Member States of the European Union and the other States belonging to the European Economic Area, as well as Switzerland and the United Kingdom, Vatican City and the Republic of San Marino.

A – Wording of a tailor-made policy (Environmental Protection)

This text is aimed at all types of business and is an important innovation in the Italian insurance market. It is an innovative and modular text that contains guarantees that have never been given before in the environmental field, not only in Italy but also abroad. The basic cover includes all the obligations set out in the ELD[47] and in the national legislation on remediation and environmental damage, as well as many optional guarantees and important free services to support the company. These form part of an innovative tool with which the company provides the policyholder with concrete support for effective loss prevention and the management of any crisis and the consequences of the loss event.

The main points are summarised below:

1. **Recipients**

The policy is aimed at all types of businesses. No sector or turnover range is excluded. The following can be insured under the same policy:

- ◊ Active and inactive sites;
- ◊ Activities at third party sites, including loading and unloading at third party sites;
- ◊ The commissioning of goods transport.

In addition to companies, the policy can also be adapted to cover the environmental liability of private individuals and their homes.

2. **What it covers**

The 2022 edition of the Environmental Protection Policy covers all the interventions required by current environmental liability legislation[48] both on and off-site, caused by sudden or gradual events, with a full policy limit and no sub-limits.

3. **Cosa non copre**

The policy does not cover:

- ◊ Events occurring before the retroactive date or after the expiry of the end of the contract;
- ◊ Anything expressly excluded, such as radioactive pollution, damage caused by GMOs, transmissible genetic modifications.

47 ELD- Environmental Liability Directive is the Directive on the prevention and remedying of environmental damage. In Italy, it was transposed by Legislative Decree. 152/2006 as amended.

48 Bonifiche" Parte Quarta Titolo V del D. Lgs. 152/2006 e s.m.i, e "Danno Ambientale" Parte Sesta del D. Lgs 152/2006 e s.m.i.

Guarantees and Services

Basic Cover

The policy provides cover for interventions required by environmental regulations, in particular:

- Emergency response, including prevention and emergency safety measures;
- Restoration works including remediation, operational safety, permanent safety, primary remediation, compensatory remediation complementary remediation, post-remediation works

The basic cover also includes, with reference to the above interventions:

- Designing and drafting the documents required by the regulations;
- Analysis and monitoring;
- Any damage to the insured's property caused by the work strictly necessary to carry out the above analyses and monitoring (e.g. it may be necessary to remove a floor in order to take samples);
- Investigations strictly necessary to identify the source or technical causes of the environmental damage – or imminent threat thereof; such interventions do not include the replacement of installations or their parts (e.g. repair of a leaking pipe);
- Damage caused by emergency interventions (e.g. dispersion of fire-fighting water).

Additional guarantees

In order to tailor the basic cover to the needs of a wide range of businesses, there are several optional guarantees available that can be triggered by an environmental damage event, which can be grouped into three categories:

1. Damage to third parties (damage to property, persons and business interruption);

2. Losses suffered by the insured himself (damage to his property and business interruption);
3. Guarantee extensions:

- **Cause –** environmental damage caused by vandalism, extreme natural events, fire from third parties, cybercrime;
- **Substances –** coverage of damage caused by asbestos and possibly also caused by PFAS and radioactive material;
- **Parties causing the damage –** this extension applies to damage caused by contractors and subcontractors of the insured;
- **Climate Change –** protection of the insured in the event of climate litigation In particular, this innovative guarantee offers:

  ◊ **LEGAL PROTECTION -** The defence of the insured in a possible lawsuit in which he/she is accused of contributing to Climate Change. The amount for legal protection is ¼ of the maximum limit;

  ◊ **CLAIMS -** If, despite the evidence submitted in his defence, the insured us found liable to having contributed, even partially, to climate change, the cover will also extend to any claims by private individuals who have suffered damage as a result of such changes.

In relation to climate change, all policyholders with companies that are members of Pool Ambiente are also offered access to a platform developed in partnership with Lifegate to help companies assess, monitor and reduce their greenhouse gas emissions.

Appendixs to the policy – Corporate Environmental Sustainability Objectives

The appendix 'Corporate Environmental Sustainability Objectives' can also be included in the policy documentation. This appendix, which is optional in any case, can be completed:

- at the time the policy is taken out, if the policyholder has communicated to the company his environmental sustainability objectives and, in particular, the inspection and maintenance interventions of the installations;
- after the on-site inspection and the drafting of the Prevention Report by the Pool Ambiente (Prevention Service, see below) identifying improvement measures for more effective prevention of environmental damage.

On the basis of the objectives identified, improvements to policy conditions are agreed upon, possibly at several different times.

Achievement of the objectives is not mandatory and failing to achieve them has no consequences for the policy.

B – Standard Policy Text (Environmental Damage - Light)

This text was developed specifically for SMEs. The basic cover is very comprehensive and includes all obligations under the ELD and national legislation on remediation and environmental damage; various free services are also included in addition to the guarantees. Unlike the tailor-made wording, this text does not provide for any modifications or customisation.

Its basic cover also includes environmental damage caused by extreme natural events (such as earthquakes, deluges, tornadoes, floods) and third party claims in the event of climate disputes. It is also possible to agree on the execution of the necessary interventions directly by the company.

In order to take out the policy, certain technical requirements relating to the prevention of environmental damage must be met.

This policy wording, like the previous one, applies not only to 'pollution' but more generally to any 'damage to the environment' and therefore also to cases of degradation of a natural resource without the release of a substance (see Chapter 2).

The policy covers all interventions required by current environmental liability[49] legislation, both on and off-site, caused by sudden or gradual events, with a full policy limit and no sub-limits, including the design, analysis and execution of the interventions. It also covers damage caused to third parties as a result of environmental damage in accordance with the Italian Civil Code.

49 'Remediation' Part Four Title V of Legislative Decree. 152/2006, as amended, and "Environmental Damage" Part Six of Legislative Decree 152/2006, as amended.

This text is divided into two specific sections:

- **Past – 10 year retroactive –** Covers environmental damage caused by an event that occurred in the ten years prior to the policy being taken out, that was unknown to the insured at the time the policy was taken out and that became known during the term of the policy.
- **Present and Future -** for environmental damage originating from an event that occurred and that became known during the term of the policy.

5.3 Support services and incentives for environmental damage prevention and effective damage management

The premium of policies offered by Pool Ambiente member companies include important and useful services that help the policyholder prevent and mitigate environmental damage. In particular, the services are designed to support the company at three very important moments:

1. Environmental damage prevention;
2. Environmental crisis management;
3. Managing the consequences of environmental damage.

A more detailed description of each of the services is provided below.

5.3.1 Environmental Damage Prevention Service

This service is designed to help companies improve their environmental risk management and prevent environmental and climate damage in a number of ways:

ENVIRONMENTAL RISK TRAINING

Every six months, Pool Ambiente, in cooperation with CINEAS, organises a Webinar for companies on environmental liability risk management. Participation in the webinar is completely free of charge and it is possible to apply for the acknowledgement of training credits for HSE managers and other professionals.

The course is taught by several lecturers who are experts in environmental risk and damage from engineering, environmental consultancy, emergency response and law firms, as well as from Pool Ambiente. Insured companies can also access the CINEAS reserved area at any time where videos and training materials are available.

Each webinar focuses on a different topic, but in general the following topics are always covered:

1. Environmental risk management as a strategic factor for environmental sustainability – Environmental insurance coverage and services;
2. Sources and Scenarios of Environmental damage;
3. The new UNI 'Protected Environment' certification;
4. Mapping the company's vulnerabilities and identifying appropriate mitigation Measures;
5. Emergency response: emergency response and crisis management;
6. Communication in environmental crisis management.

CLIMATE STRATEGY

Pool Ambiente, in cooperation with Lifegate, has set up a climate change platform to help companies reduce their greenhouse gas emissions and move towards climate neutrality.

CONSULTANCY FOR THE UNI "PROTECTED ENVIRONMENT" CERTIFICATION

If a company wishes to implement the UNI "Protected Environment" certification (PdR UNI 107:2021), it can request free advice on how to do so. Obtaining the UNI 'Protected Environment' certification in turn entitles companies to a discount on their environmental policy premium.

PREVENTION AND CONSULTANCY REPORT FOR BETTER ENVIRONMENTAL RISK MANAGEMENT

This is a personalised consultancy service to improve environmental risk management and make environmental damage prevention more effective. The consultancy is based on analysing documents and carrying out site visits by specialised technicians. On the basis of the information obtained, the 'Prevention Report' is prepared and sent to the company: a summary document containing the results of the analysis and evaluation of the environmental risks identified and the recommended prevention and mitigation measures.

It is a free choice of the insured whether and which interventions to implement. Non-implementation has no consequence on the conditions of coverage. If, on the other hand, the insured decides to implement one or more of the recommended measures, improved conditions are foreseen, which can be contracted in advance with the insurance company.

CASE STUDY Prevention Report – COMPANY SITE VISIT

An on-site inspection to prepare the Prevention Report was scheduled with the agent at the premises of an insured company located in an industrial area on the outskirts of a large city. The visit consisted of an initial meeting and an inspection of the facilities.

During the initial meeting in the office, information was provided about the site, production activities, plant layout, raw materials used, production cycle, products and waste.

Based on this information, potential sources of damage to the environment and existing prevention and mitigation measures were identified together with the company.

In particular, it emerged that there was a fire at the company a few years ago, following which essential fire-fighting equipment was installed and staff training levels were increased.

During the meeting, when discussing utilities, we were informed that the heating system was powered by natural gas. As the building dates from the 1970s, we asked how long methane had been used and what had been used to power the heating system before that.

We were informed that the switch to natural gas took place in the early 2000s and that previously diesel fuel had been used, It had been stored in an underground tank still on site, the amount of product remaining in it currently unknown.

The boiler room was large enough to accommodate both the oil and natural gas boilers, which is why it was decided to leave the tank in place so that it could be hypothetically be reused in the future, but without emptying or checking it.

Furthermore, the tank was not mentioned in the policy questionnaire because the manager who filled it in had joined the company after the switch to natural gas and was therefore unaware of its existence.

The site visit was useful for the policyholder because:

- It made it possible to map a potential source of environmental damage of which he was unaware; it was pointed out that underground tanks were the main source of contamination and that this oversight would sooner or later lead to contamination;
- It was possible to establish that any accidents attributable to the tank would not be covered by the policy as it was not mentioned in the underwriting questionnaire.
- The insured was also given guidance on the prevention and mitigation measures to be taken, such as checking the contents, emptying, remediation, leak testing and eventual removal of the tank.

5.3.2 Crisis Management Service

This service is designed to assist the company during the emergency management phase, which is an extremely delicate moment when time is of the essence and it is difficult to find reliable partners in a timely manner. The service consists of two different subservices.

EMERGENCY RESPONSE

The insured may request the emergency response provider to carry out emergency interventions by calling the provider's freephone number directly.

In the event of an emergency, the selected Emergency Response Companies will provide the following services at the Insured's request:

- Provide technical assistance by telephone;
- Send a technician to the accident site to carry out an initial technical inspection;
- Prepare and activate emergency communications to all relevant authorities;
- Identify the necessary emergency measures and make a technical and economic proposal.

A reduction in the excess or percentage excess is usually also granted as an additional benefit for using this emergency response service.

MEDIA RELATIONS

The insured is entitled to the assistance of a press office specialising in environmental crisis management in order to limit the damage to image and reputation resulting from the accident.

To provide this service, which is free of charge to policyholders, the Pool has signed a special agreement with Lifegate, a leading Italian company in environmental communication and crisis management.

Specifically, this service provides:

- Personalised advice on how best to communicate the incident and what to say to the media;
- Assistance in drafting statements and press releases;
- Contacting and sending press releases to national and local newspapers.

Most micro and SMEs do not have a dedicated press office and the risk of being unprepared to handle communications at a critical moment is very high. Having a competent and well-trained press office that can provide immediate assistance is therefore an important added value that can significantly contribute to reduc-

ing reputational damage, maintaining good relations with the authorities and the neighbourhood and, consequently, reducing the cost of the claim, the amount of the claim and the demands made by the authorities.

Even in cases where the company already has its own press office, in 99% of cases it is a press office with specific knowledge of the company's sector (e.g. food, metals) but little expertise and experience in dealing with 'environmental crises'.

In both cases, the service is therefore a valuable added value to the insurance offer.

5.3.3 Environmental Damage Management Service

Through this service, the company assists the policyholder in the complete turnkey management of the environmental damage event.

In particular, the policyholder will benefit from the expertise and advice of the team of experts, which includes environmental professionals such as:

- Civil, criminal and administrative lawyers specialising in environmental law;
- Technical advisers;
- Remediation companies;
- Specialised laboratories, university professors, planners.

The aim of the service is to make the Company's and Pool's expertise available to the policyholder in order to:

- Resume activities as soon as possible;
- Provide the policyholder with the best defence and protect him from excessive or unlawful claims;
- Carry out highly effective and remedial emergency and restoration work in the shortest possible time and at a reasonable cost, compatible with the production activity being carried out;
- Manage relations with regulators in the best possible way;
- Minimise damage to reputation and image;
- Ridurre il più possibile l'eventuale danno reputazionale e danno all'immagine.

ARTICLE

Green enterprises and environmental liability insurance policies: the "responsible governance" of risk – by Antonio Barone, Professor, Lawyer

Lawyer at Studio Legale Barone, Professor of Administrative Law at the University of Catania and Counsel before the Court of Cassation

A brief reflection by public law academics on the current legal value of environmental liability insurance policies must start from the concept of the 'responsible governance' of environmental risks, in which all actors, public and private, are key players, beyond the traditional contrasts between authority-freedom and public-private. This theoretical proposition now has a solid constitutional foundation. In fact, according to article 41, paragraph 2, of the Constitution, as recently amended by Constitutional Law No. 1 /2022, private economic initiative '*may not be carried out in conflict with social utility or in such a way as to harm health, the environment, security, freedom or human dignity*'. In the constitutional dimension, human safety, health and the environment are presented as 'evaluative standards' capable of conditioning any legally relevant action, regardless of the public or private subjectivity of the actor. It is no coincidence that, according to Article 3 ter of the Environmental Code (Legislative Decree No. 152/2006), the protection of the environment, natural ecosystems and cultural heritage must be guaranteed by all public and private bodies and public or private natural and legal persons.

The duty to monitor the effective respect of human safety, health and the environment, therefore, goes beyond the exclusive reference to public actors and constitutes an imperative commitment also for the main producers of environmental risks: companies. More than anyone else, they are in a position to constantly monitor the consequences of production processes in the light of technological and scientific developments that are implemented for (legitimate) profit.

This implies overcoming the exclusive *command and control* logic, in which the company's green commitment is strictly limited to the information contained in the various administrative environmental permits (integrated environmental authorisation, etc.). European and national legal systems provide for several instances in which companies are obliged to co-manage environmental risks, regardless of the guidance provided by public administrations. Consider, for example, the implementation of preventive measures and preliminary investigations that the person responsible for pollution is required to carry out as part of the remediation procedure (Article 242 of the Environmental Code). A penalty may be imposed for failure to comply with these obligations. More-

over, Article 304 of the Environmental Code stipulates that if environmental damage has not yet occurred, but there is an imminent risk that it will occur, the operator concerned shall, within twenty-four hours and at his own expense, take the necessary preventive and safety measures.

Companies' risk co-management obligations:

- enable immediate interventions that PAs are often unable to provide;
- tend to bridge the information asymmetry that often exists between PAs and companies.

There is therefore a normative tendency to make the prevention of environmental (and other) risks also the responsibility of businesses. This certainly does not mean upholding the public nature of business activity; rather, the time has come for a more up-to-date legal appreciation of business activity that takes into account the historical, economic and social contexts in which companies operate.

The perspective outlined above is further confirmed by the separate but related issue of corporate social responsibility. In implementing the principle of horizontal subsidiarity (Art. 118, para. 4 of the Constitution), the socially responsible enterprise spontaneously endeavours to place the needs of social development, environmental protection and respect for fundamental rights, at the centre of its actions.

Unlike the mandatory models of risk co-management, described above, corporate social responsibility is a voluntary choice on the part of the company. We are referring, in particular, to voluntary certifications (e.g.) on environmental safety (ISO 14001, EMAS, UNI Protected Environment); certifications which, on the one hand, have serious consequences in terms of business organisation, but which on the other hand, can also bring important advantages in terms of simplifying administrative procedures in environmental matters.

Voluntary choice is also the basis of the *compliance programmes* provided for by Legislative Decree no. 231/2001, thanks to which the company can be exempted from administrative liability for offences committed in its interest by its top management, by proving that 'the managing body has adopted and effectively implemented, prior to the offence being committed, organisational and management models suitable for preventing offences of the type committed'. This also applies to so-called environmental offences.

The subject of environmental insurance fits neatly into the evolutionary path briefly outlined here.

The public importance of business activity in the prevention and management of environmental risks casts a different light on environmental liability insurance policies, which are also characterised by an unprecedented degree of publicity, at least in terms of corporate social responsibility and therefore

horizontal subsidiarity. In fact, insurance cover can ensure the economic and financial sustainability of companies' risk co-management obligations. At the same time, environmental liability policies have become an element that characterises the Organisation, Management and Control Models (MOG) adopted by companies that decide to comply with the provisions of Legislative Decree no. 231/2001, helping to shield the company from liability for (among other things) environmental offences.

These are just a few examples, all of which can be attributed to the logic of *responsible governance* of environmental risks, in which the issue of environmental insurance can no longer be confined exclusively to the sphere of private relations between the policyholder and the insurer, but must instead open up to the different role played today by business activities, that are based directly on articles 41, paragraph 2, and 118, paragraph 4, of the Italian Constitution.

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5.4 Environmental policies as a sustainability tool

Environmental liability policies have an important social and environmental value. Their use and dissemination has a number of important economic, social and environmental benefits at different levels, both local and national. Taking out an environmental insurance policy is therefore also a tool that contributes to the sustainability of the company and the improvement of its ESG rating. The main benefits of such cover are outlined below.

Table 5.1 – Benefits of Environmental Liability insurance policies

RECIPIENTS	BENEFITS	ECONOMICI	SOCIAL	ENVIRON-MENTAL
NATURAL RESOURCES	Protection from potential degradation and contamination of land, water, air, protected species and natural habitats; in the event of damage, there would be greater guarantees of restoration to pre-event conditions.	YES	YES	YES
BUSINESS	Protection of company assets, soundness, market reputation, improved ESG rating and reduced risk of greenwashing.	YES	YES	
TOP MANAGEMENT	Protection from possible criminal sanctions in the event of an environmental offence, thanks to the assistance provided in fulfilling the clean-up and remediation obligations. required by current legislation	YES		
AREA IN WHICH THE COMPANY OPERATES	Protection of the economic fabric and the natural and man-made resources of the area, including jobs.	YES	YES	YES
POPULATION	Protection of health, well-being, quality of life and individual economic assets.	YES	YES	YES
THE COMPANY'S CUSTOMERS AND SUPPLIERS	Reduced risk of business failure and therefore reduced risk of impact on the supply chain.	YES	YES	

RECIPIENTS	BENEFITS	ECONOMIC	SOCIAL	ENVIRON-MENTAL
LOCAL AUTHORITIES	Reduced risk of business failure and therefore having to bear the costs of prevention and remediation. Greater protection of the area, its resources and population	YES	YES	YES
STATE / CENTRAL GOVERNMENT	Reduced need to allocate a portion of public funds to the reclamation / restoration of orphan sites. Greater protection of the Italian territory, its natural resources and biodiversity Reduced public spending on medical care for the population.	YES	YES	YES

In summary, environmental policies benefit all possible stakeholders, including citizens and the state, and cover different aspects of sustainability:

A) Environmental Benefits

Land, water, air, species and natural habitats are becoming increasingly vulnerable and threatened, and all the more valuable. Major threats include climate change, overexploitation and undoubtedly the risk that they will be contaminated or otherwise degraded by economic activities.

Protecting the environment and natural resources from potential degradation and destruction is undoubtedly one of the most important benefits of environmental liability policies.

By taking out this type of cover, the company is supported, advised and incentivised to better manage its environmental risks by taking all the necessary measures to effectively prevent damage to the environment and to mitigate the consequences in the event of damage. This support is provided in a number of ways, including free advice of specialised technicians from Pool Ambiente, but also through policy incentives in the form of discounts and other improved conditions when certain preventive measures are implemented.

Another important element that contributes to the protection of natural resources is that the policy does not apply in the event of non-compliance with standards and regulations; it is therefore very common for companies that have an environmental liability policy to better manage their environmental liability risks and demonstrate greater regulatory compliance.

The existence of a policy is also a guarantee to the authorities and the local community that, in the event of environmental damage, the company will be able to meet its obligations to secure and restore the damaged natural resources quickly, effectively and definitively, both economically and technically.

B) Social Benefits

When environmental damage occurs, not only are natural resources and the ecosystem services they provide affected for a long time, but people also pay the price in terms of their health, well-being and quality of life. Furthermore, the people potentially affected may be not only the company's employees, but generally the entire population of the area affected by the environmental damage. Living in an area where, for example, the water table has been severely contaminated has serious repercussions on human health, not only in terms of possible health problems associated with exposure to these substances, but also in terms of stress and depression, which are potential causes of disorders and diseases that reduce life expectancy and quality of life.

Taking out an environmental liability policy helps to reduce the likelihood and scale of this type of 'accident' and provides guarantees for the remediation and restoration work, which is an important safeguard for the health and well-being of people and the maintenance of a good quality of life.

The guaranteed execution and timeliness of the remediation and restoration work not only shortens the period of exposure to contaminants, but also allows for a more rapid restoration of the ecosystem services provided by the natural resources (e.g. a small lake that can continue to be a destination for walking, swimming and recreational activities) to the benefit of the local community.

The continuity of the business responsible for the damage, and therefore the preservation of direct and ancillary jobs, also has social benefits, as it avoids the creation of socially run-down and degraded neighbourhoods and areas and the need for families to relocate.

C) Economic Benefits

IThere are basically three main economic benefits to be gained from the dissemination of environmental liability policies, both at local and national level:

- **ECONOMY –** The risk of default by the company following an environmental damage incident is reduced because the cost of remediation and damage to third parties, are covered by the policy. In this sense, the policy also protects the company's assets, its soundness and its management, even in the event of environmental offences. It also protects jobs and the industry as a whole from possible repercussions;
- **REMEDIATION –** There is a significant reduction in the need for the state / local authorities to fund reclamation and restoration work, which has been

a major item in the public budget for a number of years, resulting in a continuing need for funding. Under Italian law, in the event of the insolvency of the company or in any case of non-compliance with the remediation / restoration obligations, the competent Region has to burden the cost of these interventions. In its National Recovery and Resilience Plan (NRP), Italy, for example, has allocated €500 million for the remediation of 'orphan sites', i.e. contaminated sites that have not been restored by the responsible parties or landowners because they are unknown or in default. This money could have been saved or used for other purposes if environmental liability policies had been more widespread;

- **HEALTH –** Another important saving for the Treasury is the National Health Service. Compared to the estimated €128 billion set aside for 2024, a significant portion could certainly be saved: the cost of medical and hospital care for all those patients who have developed illnesses as a result of exposure to pollutants that have leaked as a result of environmental 'incidents' or related stress.

Why environmental liability policies contribute to the prevention of environmental damage

Le polizze Environmental policies are also tools that can be used to promote a culture of environmental damage prevention, for example through:

1. **ECONOMIC INCENTIVES -** The policy premium and other terms and conditions are determined on the basis of the actual risk. The better the environmental risk is managed, the better the policy conditions will be: lower premium and excess / percentage excess, higher policy limit, no sub-limits or exclusions, optional free guarantees. This provides an important incentive for the company to improve its environmental risk management over time. The purpose of the appendix 'Objectives for improving the sustainability of the organization' is to agree in advance the benefits that the company will gain from improving its environmental performance, including risk management.
2. **TRAINING –** Free training on environmental liability risk management is provided, with CERSA training credits recognised for HSE Managers and Safety Managers to further encourage the presence and participation of these key company personnel.

3. **TECHNICAL SUPPORT –** the holder of a policy taken out with a member company of Pool Ambiente can benefit from the following customised support:
   - ◊ **PREVENTION REPORT –** free, customised advice is provided, usually following a site visit, to identify strengths and weaknesses in environmental risk management and to identify areas and priorities for action.
   - ◊ **UNI PROTECTED ENVIRONMENT CERTIFICATION –** free, personalised advice is available to help the company implement the PdR UNI 107:2021. Obtaining the certification then entitles the holder to an additional discount on the insurance premium.

ARTICLE

ANIA's commitment to environmental and climate protection – by ANIA

To date, the Italian entrepreneurial fabric, made up mainly of small and medium-sized enterprises, still suffers from a large gap in insurance coverage, despite the high level of exposure to catastrophic events that seriously threaten their business stability, such as those related to climate change, cyber risks and the environment.

For example, only one in 20 enterprises is insured against natural hazards (floods and earthquakes). It is mainly medium and large enterprises that are insured against these risks, with penetration rates of 60% and 90% respectively. However, this percentage drops dramatically to 15% when it comes to micro and small enterprises.

First the pandemic and then the war in Ukraine contributed to an increase in the perception of risk among citizens and businesses, highlighting new insurance needs. This increased awareness is confirmed by premium income from non-motor lines of business, including property and environmental liability policies, which continued to grow in 2022, following the positive trend of 2021, when a significant increase (+5.4%) over pre-pandemic levels was already recorded.

In 2022, premiums written the in non-life non-motor business increased by 8.5% compared to the previous year. The strongest growth was recorded in health insurance (+12.6%), pecuniary losses (20.9%) and credit (+25.1%). Premiums also increased in accident (+4.4%), fire (+6.2%), legal expenses (+6.4%), assistance (+6.9%), aircraft hull (+7.6%), surety (+7.7%), general third party liability (+8.2%) and other property damage (+8.3%).

However, despite the positive figure, the non-motor non-life sector, where, in most cases, the choice to insure or not to insure tends to be free, still suffers from a high level of underinsurance, and not only in relation to climate risks.

In terms of environmental policies, for example, from the recent work carried out by Pool Ambiente based on a statistical survey conducted by ANIA, it emerges that only 0.45% of companies, almost all of which are located in the North, take out insurance to cover these risks.

Interestingly, it is mainly companies in the waste sector that have environmental insurance (up to 19.12% of the total). The greater prevalence of these policies, especially in the Veneto region, is probably linked to the fact that environmental liability insurance has been compulsory in this region since 1999. Without this obligation, the percentage of insured waste management companies would probably have been much lower. These figures are surprising, especially given the current context in which we live is characterised by an increase in the intensity and frequency of catastrophic events. The impact

of such risks on a business can be devastating and, in the worst cases, lead to its closure. It is vital that businesses begin to take a proactive approach to risk management by equipping themselves with an appropriate umbrella of protection and viewing the purchase of insurance cover not as a cost but as a necessary investment to ensure business survival and continuity.

Currently, as part of the 2024 budget law, an obligation has been introduced for companies to insure against natural catastrophes (earthquakes, floods and landslides). In our view, this provision is a step in the right direction towards creating a more resilient social and economic system for our country and sees the insurance industry as a key player in achieving this common goal.

We hope that similar measures can be considered, as soon as possible, not only for residential housing, but also for other types of disaster risk.

Only by mutualising and diversifying risks can insurance be made more economically sustainable. It is clear that if only those most exposed to a given event are insured, insurers will struggle to provide adequate financial cover and premium levels will remain high.

There is a misconception among the population that the state will pay in the event of a disaster, when in fact the public subsidies usually granted on such occasions are in most cases insufficient in relation to the scale of the damage, and the time taken to obtain them is often too long.

Public intervention following a disaster, financed by general taxation, is often conditioned by economic circumstances and limited to restoring the existing situation, reducing investment to a minimum

As was recently recalled in a well-known document signed by the European Central Bank and Eiopa, insurance is a key resilience tool to ensure the financial stability of households and businesses in the face of particularly severe events. This concept was also recently reiterated at a public event by the Governor of the Bank of Italy. In particular, the Governor mentioned how a decisive expansion of policies against catastrophic events would reduce the currently high costs of these policies. Italy is particularly poor in this respect: on average over the period 1980-2020, only 6 per cent of losses related to such events were insured, compared with 22 per cent in Europe. The lack of insurance was greatest among smaller enterprises and those located in the South.

He also pointed out that adequate insurance cover should also be considered by banks as an important element of risk mitigation, especially for those companies located in high climatic risk zones, and therefore a preferential element to be taken into account when granting loans and financing.

ANIA

Italian National Association of Insurance Companies

5.5 The diffusion of environmental damage policies in italy (ANIA data and processing by Pool Ambiente)

The percentage of Italian companies that have a comprehensive environmental liability insurance policy is 0.45%. This is the result of a study carried out by Pool Ambiente based on a recent statistical survey carried out by ANIA on the extent of insurance cover for environmental damage in Italy. This survey involved almost all operators in the environmental insurance market in our country.

It is only valid for the (calendar) year 2021 only and will then be updated every year thereafter. The ANIA statistics were then compared with ISTAT data on the number of active companies in the same period.

Environmental liability insurance is open to all types of enterprises, regardless of their sector and size. The figures below therefore do not refer to just a few segments, but to the entire portfolio of policies, ranging from insurance coverage of micro-enterprises and SMEs to large multinational corporations.

Table 5.2 – Percentage incidence of environmental liability policies (No. of policies / No. of enterprises) by sector (2021)[50,52]

		ANIA DATA (2021)						
SECTORS	No. active enterprises in Italy[51]	No. policies	Distribution No. Policies / Sector	Incidence No. policies / companies	Technical premium (€) [1]	Distribution of technical premiums	No. claims	No. claims distribution
AGRI-FOOD	24.970	205	5%	0.82%	1.343.707	5%	6	5%
CIVIL, COMMERCIAL, TOURISM[53]	577.119	143	3%	0,02%	3.179.844	12%	3	3%
PAPER, WOOD, PRINTING	21.755	78	2%	0,36%	405.822	2%	0	0%
CHEMICAL	3.571	249	6%	6,97%	2.461.842	9%	3	3%

51 ISTAT Enterprises and employees data (istat.it). Sole proprietors, freelancers, self-employed and enterprises with no employees have been deducted from the total number of active enterprises in Italy.

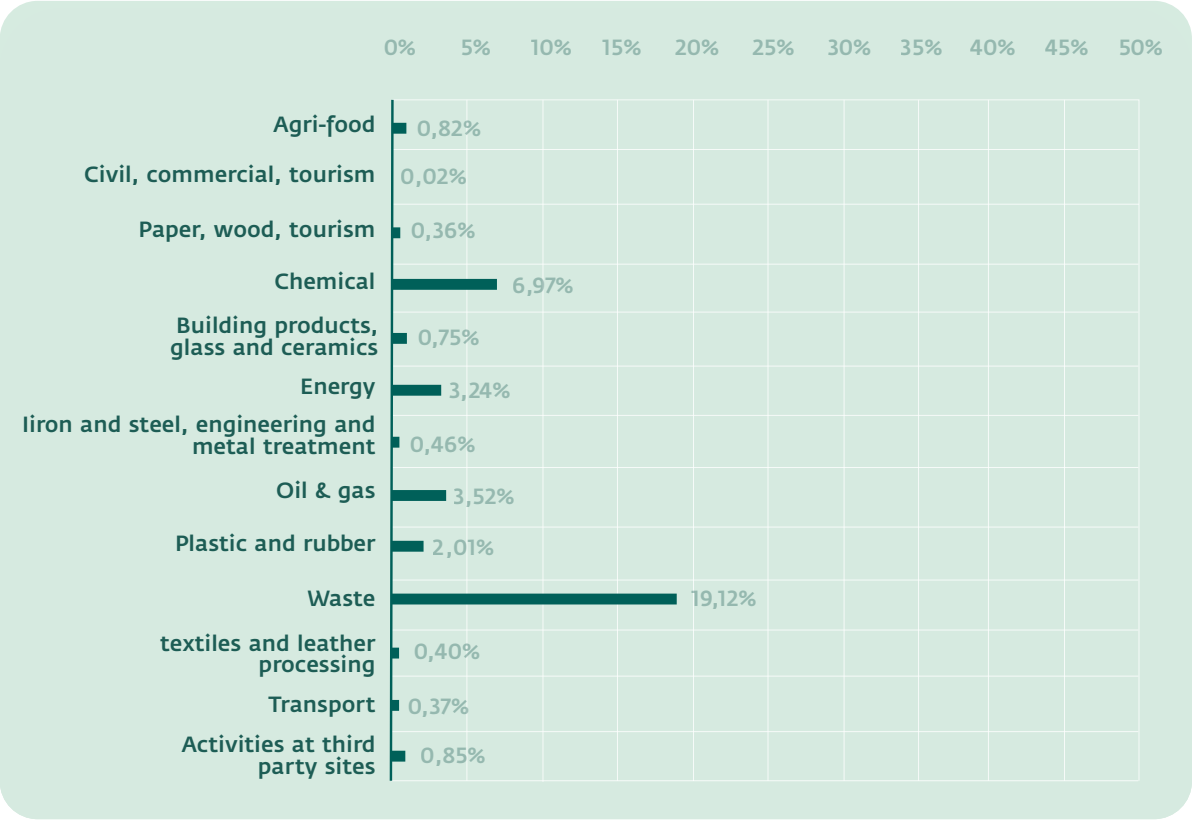
52 Calculated by Pool Ambiente based on ANIA data for 2021

53 The following activities have not been included In the 'Civil, commercial and tourism' sector as they are considered to be low risk and therefore not relevant for the purposes of this analysis: Law and accountancy firms (Ateco code 69), Real estate activities (Ateco code 68), Business and management consultancy activities (Ateco code 70).

SECTORS	No. active enterprises in Italy[51]	ANIA DATA (2021)						
		No. policies	Distribution No. Policies / Sector	Incidence No. policies / companies	Technical premium (€) [1]	Distribution of technical premiums	No. claims	No. claims distribution
BUILDING PRODUCTS, GLASS AND CERAMICS	9.199	69	2%	0,75%	414.373	2%	1	1%
ENERGY	2.468	80	2%	3,24%	1.191.986	5%	14	10%
IRON AND STEEL, ENGINEERING AND METAL TREATMENT	82.286	378	9%	0,46%	3.442.954	13%	11	10%
PETROLEUM[54]	6.896	243	6%	3,52%	2.678.634	10%	48	42%
PLASTIC AND RUBBER	6.774	136	3%	2,01%	1.260.856	5%	3	3%
WASTE	6.585	1.259	30%	19,12%	5.084.353	19%	13	11%
TEXTILES AND LEATHER PROCESSING	19.057	76	2%	0,40%	477.339	2%	0	0%
TRANSPORT	41.189	154	4%	0,37%	1.404.451	5%	4	3%
ACTIVITIES AT THIRD PARTY SITES	127.969	1.086	26%	0,86%	3.083.830	12%	9	8%
TOTAL	929.838	4.156	100%	0,45%	26.429.996	100%	115	100%

54 Fuel storage facilities and service stations have been included in the 'Petroleum' category and not in the 'Civil, Commercial and Tourism' category, as in the Ateco codes

Figure 5.3 – Percentage incidence of environmental liability policies (No. of policies / No. of enterprises) by sector (2021)



- **Waste -** the percentage of companies in the waste management sector that have an environmental liability policy is 19.12%. The explanation for this higher prevalence of environmental liability insurance is undoubtedly linked to the fact that since 1999, environmental liability insurance has been compulsory in the Veneto region for companies in the waste sector, which have to take out an insurance policy and a guarantee in favour of the region for environmental damage[55]. Without this obligation, the percentage of insured waste management companies with an environmental policy would probably fall to around 7.66%, according to an estimate based on portfolio data from Pool Ambiente[56];

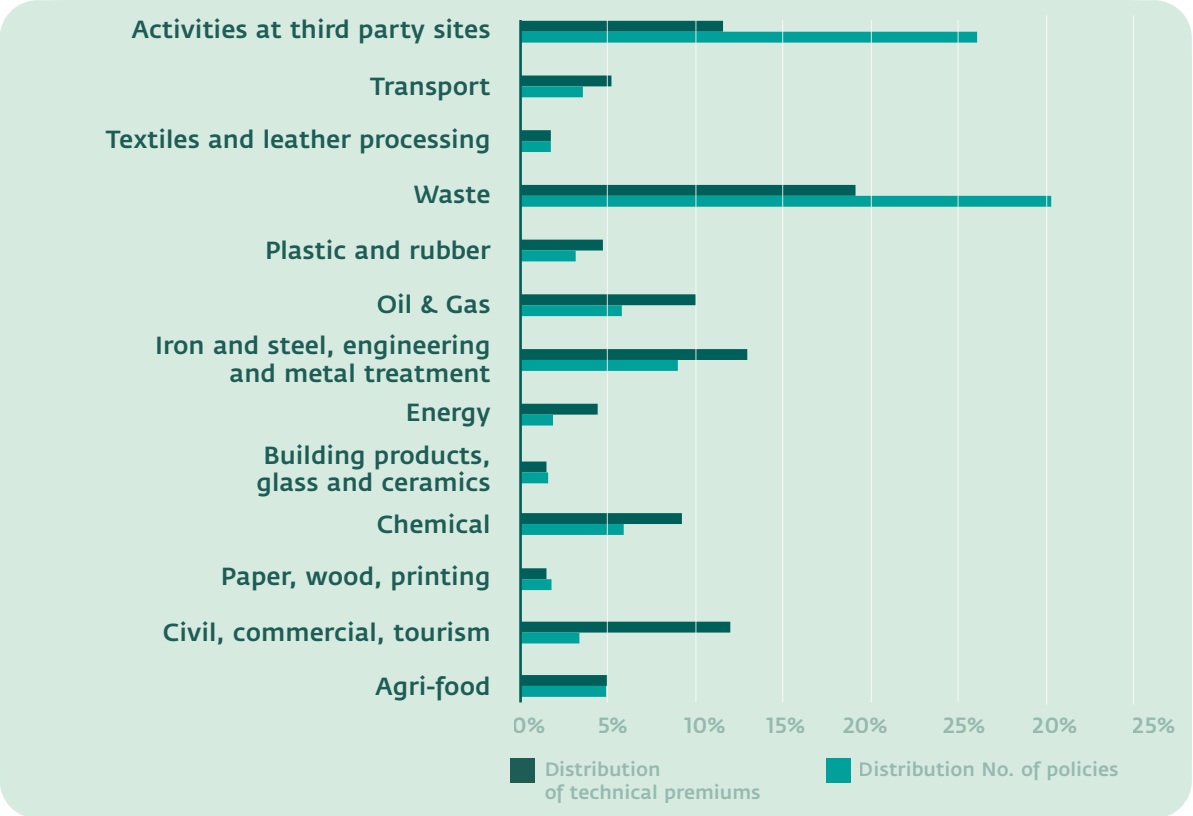
55 The Veneto regional law that provides for compulsory environmental liability insurance for companies in the waste sector is D.G.R.V. no. 2528 of 1999. This law and subsequent amendments stipulates that companies involved in the collection, transport, recovery and disposal of waste must take out an insurance policy with a limit of at least €3,000,000 per claim and per insurance year.

56 This estimate was calculated by subtracting the number of policies in the waste sector from the number of policies in the Veneto Region, and parameterising this figure to the number of companies in the waste sector excluding the Veneto region

- **Chemical -** the percentage of companies in the chemical sector with comprehensive environmental liability insurance is 6.97%[57]. Given that this figure is higher than the Italian average, it can probably be assumed that the existence of greater obligations and controls for these companies inevitably leads to the development of a risk culture, which also leads to greater use of the insurance instrument. However, this is still a very low figure, which should give cause for concern given the inherent risk in this sector.
- **Petroleum -** the percentage of companies in the petroleum sector with an environmental policy is 3.52%. This value also takes into account the number of roadside service stations and fuel storage facilities, which according to Istat would be included in the Civil, Commercial and Tourism category. This is still a rough estimate as some companies also cover several distributors and/or facilities under a single policy. The incidence of claims in relation to the number of policies in the oil sector, at 20%, is significantly higher than in any other sector (data processed by Pool Ambiente). This confirms a trend observed by Pool Ambiente over the last ten years, which is largely due to the progressive ageing of underground tanks containing petroleum products, which are the main cause of environmental damage.
- **Activities at third party sites -** the incidence of policies relating to activities carried out at third party sites is 0.85%. These activities mainly include construction, remediation and maintenance activities carried out at the premises of third parties, which have now begun to expressly require the contractor to have environmental liability insurance cover.
- **Steel, engineering and metal treatment –** the incidence rate of policies in this sector is 0.46%. Although in line with the national average, the low number of policies issued is again striking in comparison with activities that are frequently subject to AIAs and generally present a significant risk of environmental damage.

57 Some multinational chemical companies may be insured under international programmes not covered by this survey

Figure 5.4 – Percentage distribution of policies (policies per sector/total policies) and technical premiums (premium per sector/total premium) by sector (2021)



- **Analysis of the environmental liability policy portfolio by region –** The snapshot of the distribution of policies by Italian region provides us with some interesting information. Veneto is the only Italian region where the percentage of environmental liability policies in relation to the number of companies higher than 1%, which can be explained by the obligation of companies in the waste sector to have a policy, while all other regions have lower values. However, the region with the lowest number of policies in relation to the number of active companies is Campania, with only 0.11% of companies with environmental liability insurance.

Table 5.5 – Portfolio of environmental liability policies in Italy (no. of policies, technical premiums and no. of claims) and number of active companies by region (2021)[58,60]

		ANIA DATA (2021)					
REGION	No. active enterprises in Italy[59]	No. policies	Distribution No. Policies/Region	Incidence No. policies/No. companies	Distribution of technical premium	No. Claims	No. Claims distribution
Abruzzo	20.531	100	2%	0.49%	2%	1	1%
Basilicata	7.055	39	1%	0,55%	0%	0	0%
Calabria	19.945	46	1%	0,23%	1%	3	3%
Campania	85.508	92	2%	0,11%	2%	0	0%
Emilia Romagna	74.875	347	8%	0,46%	7%	5	4%
Friuli Venezia Giulia	16.537	70	2%	0,42%	2%	0	0%
Lazio	104.002	261	6%	0,25%	11%	18	16%
Liguria	22.877	145	3%	0,63%	3%	1	1%
Lombardy	175.569	739	18%	0,42%	26%	56	49%
Marche	26.124	83	2%	0,32%	2%	3	3%
Molise	4.072	5	0%	0,12%	0%	0	0%
Piedmont	58.649	283	7%	0,48%	7%	8	7%
Puglia	51.091	164	4%	0,32%	2%	2	2%
Sardinia	22.059	86	2%	0,39%	2%	1	1%

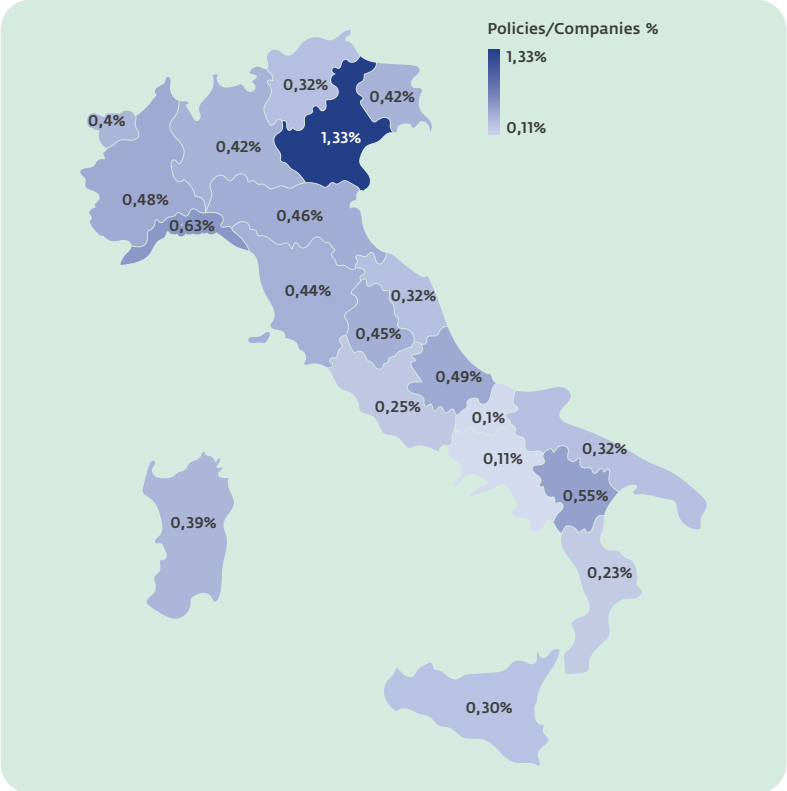
58 **Number of policies:** this refers to the number of policies underwritten from 1/1/2021 to 31/12/2021, this figure does not take into account the actual number of sites; Technical premium: this refers to the premium net of charges, expressed in Euros; No. Claims: this refers to the number of claims reported for policies underwritten from 1/1/2021 to 31/12/2021. The number of reported claims varies widely from year to year, so this figure should not be taken as an indication of the average loss ratio for the sectors considered. Based on information available to Pool Ambiente, this figure is similar to the number of remediation / environmental damage cases initiated each year in Italy; however, the official figure is not yet available (MOSAICO-isprambiente.it)

59 ISTAT Enterprises and employees data (istat.it). Sole proprietors, freelancers, self-employed and enterprises with no employees have been deducted from the total number of active enterprises in Italy.

60 Calculated by Pool Ambiente based on ANIA data for 2021

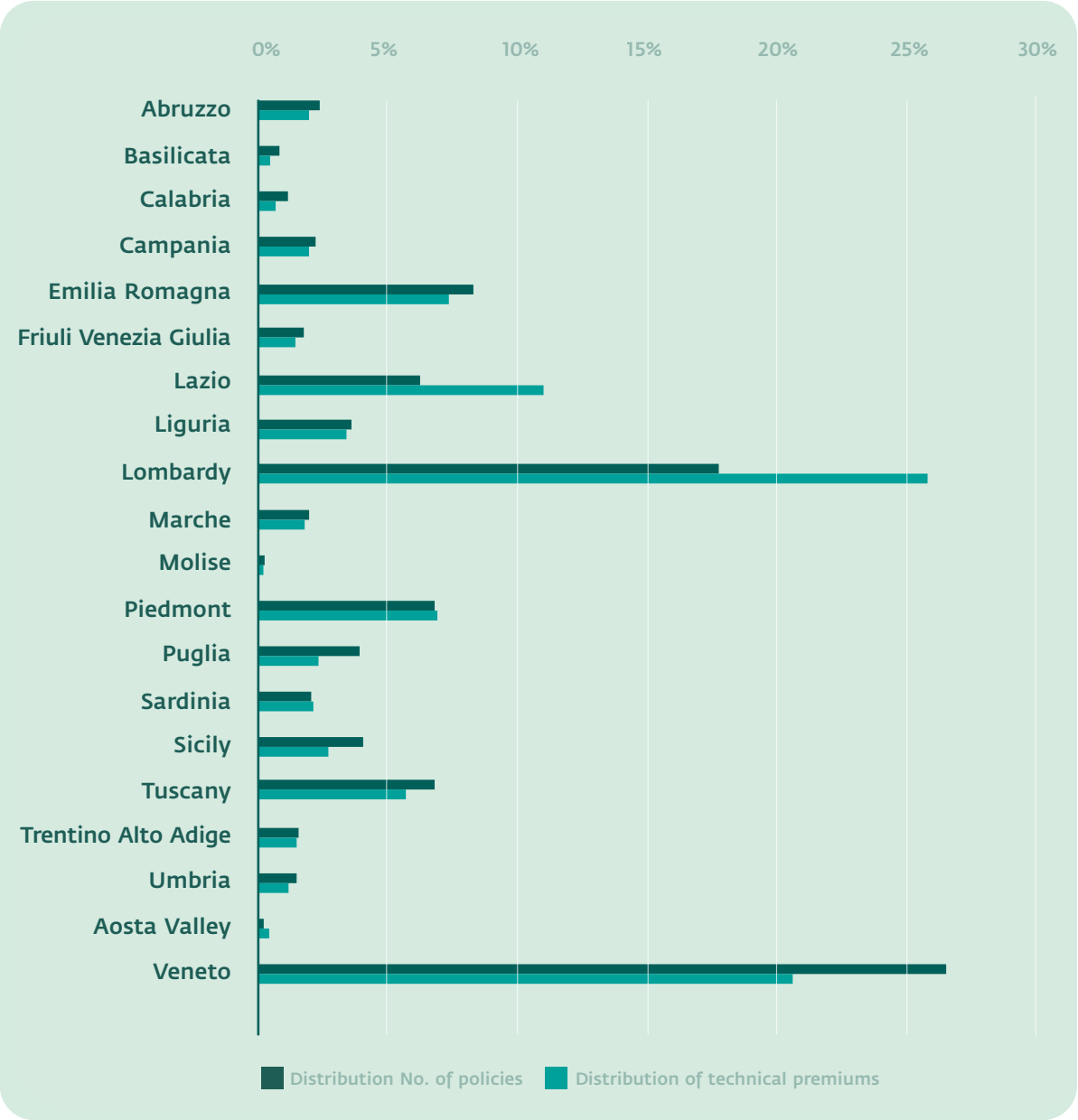
REGION	No. active enterprises in Italy[59]	ANIA DATA (2021)					
		No. policies	Distribution No. Policies/Region	Incidence No. policies/No. companies	Distribution of technical premium	No. Claims	No. Claims distribution
Sicily	55.991	169	4%	0,30%	3%	2	2%
Tuscany	63.344	287	7%	0,44%	6%	3	3%
Trenitino-Alto Adige	20.503	65	2%	0,32%	2%	1	1%
Umbria	13.861	62	1%	0,45%	1%	0	0%
Aosta Valley	2.256	9	0%	0,40%	0%	0	0%
Veneto	82.988	1.104	27%	1,33%	21%	11	10%
TOTAL	929.838	4.156	100%	0,45%	100%	115	100%

Figure 5.6 – Percentage incidence of environmental liability policies (number of policies / number of companies) by region (2021)



The graph shows the distribution of existing policies by Italian region both in terms of number of contracts and technical premiums collected. While Veneto leads in terms of the number of contracts, Lombardy leads in terms of premium income.

Figure 5.7 – Percentage distribution of policies (policies per sector/total policies) and technical premiums (premium per sector/total premium) by region (2021)



ARTICLE

The role of the insurance broker in helping to protect the environment, local areas and communities – By Flavio Sestilli President AIBA

All economic activity is obviously exposed to elements of risk, but it is also evident that in Italy, as in the rest of the world, there is a progressive evolution in the types of risk. This is the result of a variety of factors that make it increasingly necessary and urgent to protect activities and people in a conscious, complete, innovative and personalised manner.

The new and often unprecedented threats that are gradually emerging in the country's production environment are increasingly linked to the broad issue of sustainability, with the regulatory pressures that characterise it and the heightened sensitivity of stakeholders and public opinion to corporate responsibility.

The need to respond to changes and the emergence of new requirements is forcing companies to review their production processes and use those that have an increasingly low environmental impact, while at the same time promoting product innovation in terms of reusability, reparability and recyclability. The European Union has launched a very clear strategic plan in this direction, and those who do not wake up to it in the medium term could face problems of economic sustainability and continuity of production.

On the other hand, the need to protect common assets, water resources, soil, landscapes, etc., is becoming more and more evident, and all this cannot be left to private initiative and the opportunism of those who for too long have offloaded the 'negative externalities' of their actions to the community.

In this scenario, the role of the insurance broker takes on an enhanced and, in some respects, unprecedented centrality. Moreover, it is precisely in the area of environmental liability - the subject of this study - that one of the most relevant and priority games is being played.

In their role as professional intermediaries - halfway between businesses and the insurance industry - brokers are ideally placed to help make the former more aware of the risks to which they are exposed, while at the same time presenting the (new) needs of businesses to insurance companies and encouraging the industry to develop increasingly appropriate solutions.

The lack of a real culture of environmental protection within companies is probably the biggest obstacle to a real change of pace today.

Despite the fact that environmental risk, and in particular the risk of causing damage to the ecosystem, is one of the most feared risks worldwide[61], only a marginal proportion of companies have taken out a specific insurance policy, leaving them exposed to the possibility of very serious civil, criminal, economic, financial and reputational consequences.

For example, companies are often unaware of the benefits - or even the existence - of environmental liability policies, or are misled into believing that they are adequately protected by simply extending their general liability policy to cover accidental pollution.

It is in this context that insurance brokers can best play their role as a strategic partner to the company, conducting a thorough analysis of its actual risk exposure - to all types of risk - and identifying the most appropriate prevention, mitigation and management measures.

Brokers are able to identify the most effective, efficient and economically sustainable insurance solutions in relation to what is available on in the market, perhaps even suggesting and stimulating so-called *nature-based solutions*[62]. In this context, the broker acts as a stimulus for innovation in insurance products, which in the future will increasingly have to take into account virtuous and preventive behaviour when defining cover, contractual clauses and required premiums.

As mentioned above, it is not only ex-post actions that are crucial for companies, but also the implementation of specific preventive measures. Preventive action in the area of insurability of risks is also increasingly emphasised by the EIOPA[63], cwhich stresses its importance also with a view to a more widespread development of public-private partnerships.

Looking ahead, the integration of ESG factors into risk assessment will increasingly become a competitive factor, as is already the case to some extent in the assessment of financial merit. Failing to take this development into account could have a significant impact on the ability of companies to remain competitive in the medium term.

Building a strong risk culture is a central mission of AIBA, which has always been committed to raising awareness and promoting positive development in the insurance and brokerage sector through initiatives in the country, training activities for its members and constant dialogue with stakeholders.

61 World Economic Forum Global Risks Report 2023: https://www.weforum.org/reports/global-risks-report-2023/digest

62 On the meaning and scope of NBS, see https://www.naturebasedsolutionsinitiative.org/news/European-commission-report-nature-based-solutions

63 *Report on the Implementation of Climate-Related Adaptation Measures in Non-Life Underwriting Practices – TEST Febbraio 2023.*

64 Sul tema: Negri, *I criteri di sostenibilità ESG (environmental, social, governance) in ambito assicurativo: un nuovo ruolo per i Broker di assicurazione e riassicurazione*, Brokerletter (periodico d'informazione e approfondimento di AIBA), 2022.

Through the work of brokers and fundamental synergies with all industrial and institutional players, it will be possible to work towards better protection of businesses, environmental ecosystems and the entire community.

Flavio Sestilli

AIBA President
Italian Insurance Brokers Association

5.6 Obstacles to the diffusion of environmental liability policies in Italy

There are many and often intertwined reasons for the low up-take. In particular, there are some common beliefs and misconceptions in our country that hinder the spread of this type of cover.

The first real cause is the lack of insurance culture that characterises our country: if it is true that even the more traditional and well-known types of insurance, such as general liability or fire insurance, have a limited penetration in the country, this is even more evident for a more technical policy such as environmental liability insurance, particularly in SMEs.

In Italy, with the exception of the Veneto Region for the waste sector, there is no obligation to stipulate environmental liability policies and any other reference to stipulation obligations (e.g. IED and Seveso) is not in fact applied.

Therefore, given the absence of a real obligation to take out specific environmental liability insurance (with the exception of the Veneto region), the obstacles to the spread of this type of insurance cover can be summarised as follows:

1. **COMPANIES: "I am not at risk" –** The low level of corporate culture regarding the nature, origins and consequences of environmental damage risks and the low frequency of this type of damage lead to a general underestimation of this risk. Never having experienced an environmental damage event in one's career or in a company's history contributes to the lack of risk awareness and the belief that one's company is not exposed to such risks. This is compounded by the belief that the accidental pollution extension, found in most general liability policies, provides comprehensive coverage for environmental damage and is therefore sufficient to deal with the potential consequences and associated costs in the event of a claim. The existence of legal regulations and obligations, especially for companies with a higher theoretical potential for environmental impact (e.g. companies subject to AIA obligations, which, however, mainly concern emissions) or in the event of environmental damage (e.g. the ELD Directive), is not in itself sufficient to induce companies to effectively prevent environmental damage – on the contrary, complying with the requirements of such regulations often leads companies to mistakenly believe that they are already safe.
2. **INSURANCE INTERMEDIARIES: "It's a complex policy and only for some" –** The widespread belief that this is an insurance policy of interest only to a small proportion of companies, the so-called 'big polluters', combined with the technical difficulties of understanding a text that is rarely used and

65 Pool Data

whose costs – and therefore commissions – are relatively low, only serve to increase the sales network's suspicion and reluctance to propose this text to their customers, preferring more often a passive approach along the lines of 'if they really ask me...'. On the contrary, it should always be proposed, precisely because it concerns every activity and there is no such thing as 'zero risk', and this type of risk can be very high and affect the entire community.

3. **MEDIA, CONSUMERS and INSTITUTIONS –** often have an outdated view of policies and the world of insurance, often not even knowing that this risk can be insured; they also underestimate the enormous benefits that an environmental policy could have in protecting the area and the health of citizens. Ignoring the benefits, if not their very existence, adds no value or image / profitability to the more virtuous companies that manage environmental risks correctly and take out this type of insurance.

5.7 Proposals for effectively promoting environmental liability policies

Among the most significant initiatives that could encourage companies to make greater use of environmental policies and therefore increase the uptake of this type of cover, we believe the following should be highlighted:

1. Greater emphasis on the environmental liability insurance policy:
   - ◊ in the ESG rating, as a policy promotes sustainability;
   - ◊ in the Sustainability Report;
   - ◊ in the application of the Taxonomy Regulation, i.e. the Common European Classification System, which provides a "common language and a clear definition of which assets are considered sustainable, thereby facilitating transparency and comparability for investors";
   - ◊ in Law 231/2001 on the administrative and criminal liability of entities and in the guidelines of business associations (e.g. Confindustria) on the construction of organisational, management and control models. In fact, given that the regulation is designed to prevent offences, in this case environmental offences, an organisational model that also demonstrates the company's ability to prevent the possible consequences of the environmental offence is considered more complete.
2. Give economic / competitive advantages to companies that take out an environmental liability policy, for example:
   - ◊ higher scores in both public and private tenders;
   - ◊ a reduction in the amount of compulsory guarantee (e.g. companies subject to AIA).

3. Establish obligations for specific companies and sectors and reinforce what is already provided for in the existing legislation:
    - ◊ Seveso Directive;
    - ◊ IED Directive;
    - ◊ Legislative Decree 152/2006.

More generally, in order to achieve the objective of better management of environmental risks, including a greater uptake of this type of insurance, it would be important for action to be taken at national and European level to contribute to a wider environmental risk culture and wider insurance culture.

6. TOWARDS BETTER ENVIRONMENTAL PROTECTION

6.1 The current situation

The high vulnerability of natural resources is a characteristic feature of our country, which is rich in surface water bodies, surrounded by the sea, and has one of the most significant biodiversity assets in Europe[66].

Our health and quality of life, as well as our economy, depend on these resources. Protecting water, land, air, species and habitats should be a top priority for our country, along with efforts to combat climate change.

> "Protecting water, land, air, species and habitats should be a top priority for our country, along with efforts to combat climate change."

The almost total absence of maintenance and inspection obligations for companies and the (partly resulting) absence of a culture of environmental risk prevention and management leads to a general underestimation of the risks of environmental liability, and indeed, to a lack of commitment to preventing environmental damage.

The use of environmental liability insurance is also almost zero: only 0.45% of companies have this type of insurance[67], which is actually a very important tool to guarantee citizens and public bodies the restoration of damaged natural resources.

As citizens are also particularly vulnerable and exposed in case of environmental degradation. Living in a polluted environment reduces the quality of life and increases the risk of developing even serious diseases that shorten the healthy life expectancy of each of us. In our country, unfortunately, there are several 'sacrifice zones' where, for various reasons, people's health has been sacrificed as a result of serious damage to the environment.

This mix of factors makes the risk of environmental damage potentially catastrophic that has to be managed as a matter of priority, using all available initiatives and tools to prevent damage and, if it does occur, to repair it.

66 ISPRA: "Come si presenta la situazione della biodiversità in Italia?" — Article in Italian (isprambiente.gov.it)

67 Calculated by Pool Ambiente based on ANIA statistical survey data for 2021.

6.2 Summary of existing measures and incentives to promote better risk management and the use of environmental liability policies

Some of the measures that are currently used to incentivise or intended to incentivise the use of insurance include the following.

Table 6.1 – Existing measures

REFERENCE	TYPE OF MEASURE	DETAILS	EFFECT on damage PREVENTION	EFFECT on taking out an environmental liability policy
1. "Environmental Damage" Legislative **Decree. 152/2006 Part Six** as amended, in implementation of the ELD Directive 2004/35/EC.	**CURRENT REGULATION** with different obligations and responsibilities depending on the type of activity carried out.	Art. 304 c.1 is entitled 'Preventive action' and reads: "When environmental damage has not yet occurred, but there is an imminent risk that it will occur, the operator concerned shall, within twenty-four hours and at his own expense, take the necessary preventive and safety measures." In reality, however, this obligation comes into play when the potentially harmful event has already occurred and there is an imminent threat of environmental damage, in order to mitigate its potential effects and not to prevent the damage event from occurring. Overall, the regulation provides for serious consequences for the operator, and attempts to induce him to pay more attention to the management of environmental liability risks.	At the European level, this regulation has certainly contributed to the restoration of natural resources, but in our country, the pre-existing legislation on reclamation (Part Four Title V of Legislative Decree 152/2006) remains the most effective and most enforced regulation for soil and groundwater contamination. However, in terms of preventing environmental damage, the whole regulation has certainly had little effect.	Ineffective in promoting wider use of environmental liability policies.
2. "AIA - Integrated Environmental Authorisation" **Legislative Decree 152/2006 Part Two** as amended, in implementation of the "IED" Directive 2010/75/EU.	**CURRENT REGULATION** for certain types of enterprises (about 6000 in Italy)[68]	The Integrated Environmental Authorisation (AIA) is a provision that allows an installation to operate on condition that certain requirements (mainly relating to emissions) are met. Companies subject to state AIAs and some that are subject to regional AIAs are required to submit a Reference Report: verification of the state of the soil and subsoil (baseline), to be repeated at the closure of the facility. Companies subject to this obligation are also required to provide financial guarantees to cover any restoration to baseline conditions.	Quite effective in promoting better environmental risk management in companies that are subject to these requirements. However, it does not guarantee the same level of attention for all potential sources of damage at the site. Some sources are often overlooked (e.g. underground tanks).	Ineffective in promoting wider use of environmental liability policies

68 Microsoft Word - Document2 (camera.it)

3. "RIR - Companies at risk of major accidents" **Legislative Decree 26 June 2015, no. 105** as amended, in implementation of the 'Seveso III' Directive 2012/18/EU.	**CURRENT REGULATION** for companies falling within its scope (976 facilities in Italy[69])	This provides for various obligations aimed at preventing environmental damage, including an environmental liability insurance policy (Appendix F.2 Insurance Measures). The attachment is then reviewed by the Authority to ensure that it is consistent with the potential incidents that could occur.	Effective in preventing environmental damage, both in terms of reducing the likelihood and severity in the event of an accident.	Potentially effective in terms of incentivising the use of the insurance instrument, **but it is unclear what type of policy is required**: whether a dedicated policy or a simple extension of general liability policies.
4. "MOG - Organisation and Management Model" **Legislative Decree 231/2001.**	**CURRENT REGULATION** that provides for voluntary implementation.	The Organisation and Management Model (MOG) is a document provided for by Legislative Decree 231/2001, which describes the organisational processes adopted by the company to prevent and minimise the risks of wrongdoing by employees. Adequate control systems must also be in place to prevent and manage environmental offences; but there is no cover (e.g. insurance) for any damage resulting from the offence committed[70].	Not fully effective in managing the environmental risks.	Not at all effective in contributing to the promotion of environmental liability insurance cover.
5. **ESG** Rating	**CARRIED OUT BY RATING AGENCIES,** particularly for large or listed companies	The ESG (Environmental, Social, Governance) rating is a system that measures the sustainability of a company. Legislative references include: ♦ **European Green Deal** (11 December 2019). ♦ **Sustainable Finance Strategy** of the European Commission (6 July 2021): ♦ **Proposal for a Regulation** on 'transparency and integrity of environmental, social and governance (ESG) rating activities' (13 June 2023): ♦ **Non-Financial Reporting Directive (NFRD).** To date, there are no common transparent criteria for measuring ratings. There is no explicit mention of environmental damage prevention or environmental liability insurance coverage.	To date, it has not been effective in encouraging better environmental risk management.	To date, it has not been effective in encouraging greater use of environmental liability policies.

69 National Inventory of Major Accident Hazards establishments | Ministry of the Environment and Energy Security (mase.gov.it)

70 The main reference document for the application of the MOG is the one prepared by Confindustria: "Guidelines for the construction of organisational, management and control models pursuant to Legislative Decree No 231 of 8 June 2001"

6. **ISO 14001** Certification and **EMAS** Registration.	**VOLUNTARY CERTIFICATION** aimed at all companies (133,000 certified companies in 2021).	The ISO 14001:2015 standard: mentions risks of environmental damage. It requires organisations to carry out an analysis and assessment of environmental risks. The risk assessment must be carried out for each context, for all environmental aspects considered significant by the organisation and for compliance obligations relating to environmental impacts. There is no explicit reference to environmental liability policies.	Slight effect on the prevention of environmental damage.	Hardly any effect compared to the incentive to take out an environmental insurance policy.
PdR UNI 107:2021 "Protected Environment" and its certification.	**Voluntary certification**	The practice provides for the fulfilment of requirements aimed at reducing the likelihood and scale of environmental damage events. It can be applied by all companies, regardless of sector or size.	A 73% reduction in environmental damage events (Pool Ambiente estimate).	Comprehensive insurance cover for environmental damage is part of the requirements to be met.
Draft **Law No. 445 of the 19th Legislature**, on the initiative of MEPs Gadda, Rosato, Sottanelli, Bonetti, Benzoni, Ruffino. "Granting of a tax credit in favour of holders of business income for taking out insurance policies, obtaining certifications and carrying out preventive measures in environmental matters"	**Draft Law**[71]	The Draft Law provides tax incentives for: ♦ Some major maintenance work on key installations to protect water and other natural resources; ♦ Taking out an environmental liability policy. Obtaining the UNI 'Protected Environment' certification.	Encourages the implementation of measures that help prevent environmental damage.	Encourages taking out environmental liability policies.
Environmental Risk Training.	**Training**	Free webinars for businesses on environmental risk management, delivered every 6 months by Pool Ambiente in cooperation with Cineas.	Assists with risk management and prioritisation of interventions.	Raises awareness of the importance of insurance cover.

71 XIX Legislatura - Testi allegati all'ordine del giorno (camera.it)

Prevention Report for policyholders	**Consultancy**	Free personalised advice for companies with on-site visit.	Helps the company identify weaknesses in its risk management and priorities for action.	Provides training and information on how environmental liability insurance cover works.
CINEAS Master's degree in Environmental Risk Management for Sustainable Business Development.	**Training**	Training of environmental damage risk specialists, taught by experts in the sector. Provided by CINEAS in cooperation with Pool Ambiente for over 15 years.	Trains risk managers and consultants in the environmental risk management process.	Provides a detailed insight into environmental liability insurance and how it works.
Standard 'Environmental Damage - Light' policy for SMEs	**Innovative insurance policy**	Comprehensive but simplified insurance cover designed specifically for SMEs.	Taking out the policy entitles the policyholder to: ♦ Take part in training courses (point 3); ♦ Access the Climate Strategy Platform. Crisis management and environmental damage management service.	The clear and simplified wording makes the policy easy to understand even for small and medium-sized enterprises.
Environmental assessment form on **Insurance Advisor.**	**Insurance consultancy**	The Insurance Advisor platform includes a form dedicated to environmental damage risks. It is designed to assist intermediaries assess risks and propose insurance cover	Improves understanding of environmental risks.	Makes it easier to complete the questionnaire and propose environmental liability policies.
Participation in the **ANIA statistical survey** on environmental liability policies.	**Comunication**	The percentage of companies with insurance cover by sector and region was calculated by Pool Ambiente using data from the ANIA statistical survey.	Contributed to the development of initiatives to raise awareness among companies and institutions on effective environmental risk management.	It has helped to raise awareness among companies and institutions of the importance of more widespread coverage for environmental damage.

PROJECTS IMPLEMENTED WITH THE CONTRIBUTION OF POOL AMBIENTE

One of Pool Ambiente's missions is to contribute to a greater culture of environmental liability risk in companies, as well as in the media, institutions and the insurance industry itself. Below is an overview of the projects implemented over the past 5 years:

1. PdR UNI 107:2021 "Protected Environment" and its certification;
2. Draft Law No. 445 of the 19th Legislature, on the initiative of the deputies GADDA, ROSATO, SOTTANELLI, BONETTI, BENZONI, RUFFINO, 'Granting of a tax credit in favour of holders of business income for taking out insurance policies, obtaining certifications and carrying out preventive measures in environmental matters';
3. Environmental Risk Training;
4. Prevention Report for policyholders;
5. CINEAS Master's degree in Environmental Risk Management for Sustainable Business Development;
6. Standard 'Environmental Damage - Light' policy for SMEs;
7. Environmental assessment form on Insurance Advisor.

6.3 Proposals for further measures to be implemented to promote good practices in environmental risk management

Numerous measures that can be put in place to contribute better environmental risk management and greater use of insurance.

These measures can be implemented at different levels, depending on their effectiveness, cost and the time required to achieve the objective. To ensure that a company manages the risks associated with its facilities in the best possible way, measures can be introduced that act at the level of culture, incentives and/or obligations.

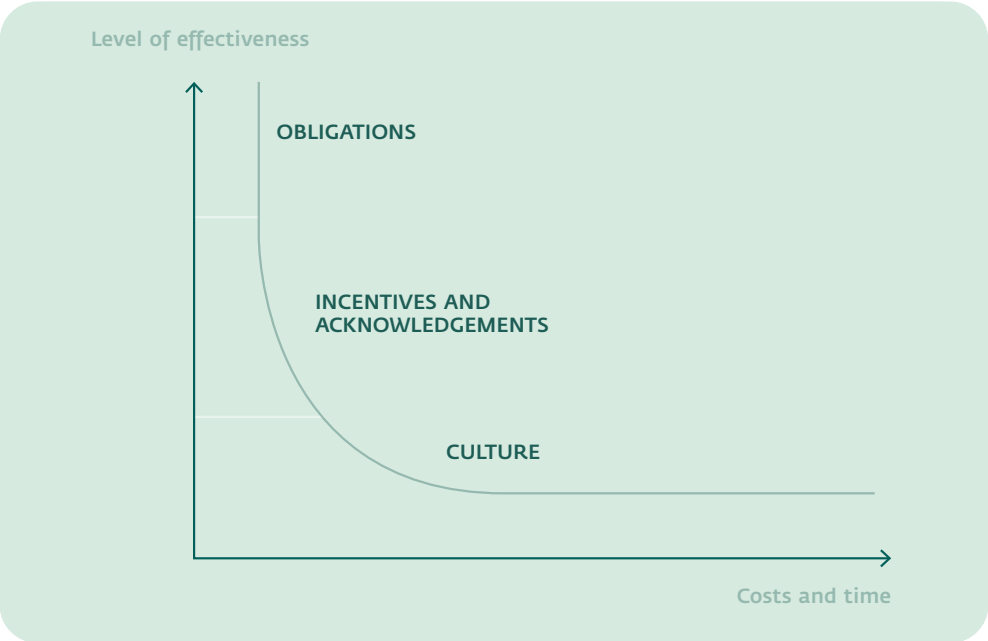
These are in fact the three macro levels, all equally important, at which action can be taken to achieve the objective of better protection of natural resources and human health:

1. **CULTURE –** measures that contribute to promoting a more positive culture of environmental risk management and the importance of environmental liability policies:
    - Awareness and information campaigns on environmental risks through various channels (the media, radio, newspapers, social media, specialised websites);
    - Free events, conferences and training on risks and insurance coverage;
    - Inclusion of the topic of environmental risk management in reference documents for businesses, in addition to those produced by the main institutions and trade associations. Some examples are:
        - **Ministry of the Environment and Energy Security / ISPRA –** development of environmental risk management guidelines for all product sectors;
        - **Confindustria –** as part of the 'Guidelines for the construction of organisational, management and control models pursuant to Legislative Decree No. 231 of 8 June 2001' and in further publications;
        - **ANIA –** examination of the issue of environmental risk management and the benefits of environmental liability insurance in the context of its annual statistical survey on the number of environmental liability insurance policies.
2. **INCENTIVES AND ACKNOWLEDGEMENTS –** measures that encourage companies to invest in environmental risk management and to take out environmental liability insurance, rewarding them with a sustainable reputation. These measures may include:

- Tax credits for expenses incurred by the company;
- Earning additional scores in green procurement and contract awarding;
- Simplification of bureaucratic processes for obtaining environmental permits, extending their duration, reducing the number of inspections by authorities;
- Reduction in the amount of guarantees in favour of entities for environmental risks;
- Equivalence of PdR UNI 107:2021 with ISO14001 and EMAS with reference to existing incentives and acknowledgement;
- Greater emphasis, in particular of environmental liability policies, in sustainability reports and in the application of the taxonomy regulation;
- Improved ESG ratings and better assessment when applying for a loan from a bank

3. **OBLIGATIONS AND REGULATIONS –** measures that provide for adaptations and precise rules for the management of environmental risks, which may concern, for example, the adaptation of installations, maintenance obligations, training courses and on-the-job training for personnel, the taking out of comprehensive environmental liability insurance.

Figure 6.2 – Measures for better environmental risk management



The most urgent measures that need to be implemented are summarised below. These are fundamental aspects of protecting the environment and human health from environmental damage events. The graph above shows that the impact on environmental risk management can be very different depending on whether the incentive or the obligation route is chosen. Interventions in the sphere of culture are the basis for building consensus and support for any further measures, but they are not very effective in the short term. Incentives, which can be maximised by a regulatory framework that sets out the direction to be followed, lead to a relatively greater dissemination of good practices.

"All these points deserve careful consideration by lawmakers in order to evaluate ad hoc measures so that each of them can be addressed quickly and effectively.

Failure to address the points indicated below could have serious repercussions on the environmental and health."

DECALOGUE

Priority actions by companies to protect the environment and human health:

1. Identification of potential sources of environmental risk and damage scenarios.

2. Routine and extraordinary maintenance of systems and equipment in accordance with the manufacturer's instructions and according to best practices.

3. Establish procedures to ensure compliance with industry recommendations and guidelines, including non-standard substances used or produced.

4. Where single wall elements are buried or rest directly on the ground, arrange for their conversion / replacement to double wall elements with continuous leakage monitoring. Where this is temporarily not possible, protect the buried element with cathodic protection, carry out regular structural checks and consider possible vitrification.

5. For above-ground elements, provide an adequately sized and sealed containment basin.

6. Provide measures to prevent or contain spillages during loading and unloading, such as overflow valves, marking of loading points, safety fittings and rainwater separation.

7. Carry out regular video inspections and leak tests on non-metallic underground pipes.

8. Train company personnel in effective environmental liability risk management and emergency management.

9. Adoption of PdR UNI 107/2021 'Protected environment – Guidelines for the prevention of environmental damage – Technical criteria for effective environmental risk management'.

10. Take out third party and environmental liability insurance cover.

7. CONCLUSION

There is certainly no shortage of critical issues relating to environmental risks and their management, and indeed the term EMERGENCY in reference to this issue is not out of place.

The approach we took in writing this first report was that of a STARTING POINT, a new beginning that would allow us to focus on the issue of environmental damage, free of all prejudices and clichés regarding this type of risk, in order to create a new awareness of the potential for environmental damage that is present in all economic activities, but which also affects ordinary citizens.

The systematic underestimation of environmental risks and the very limited penetration of environmental liability insurance is a serious problem that requires the attention of all stakeholders.

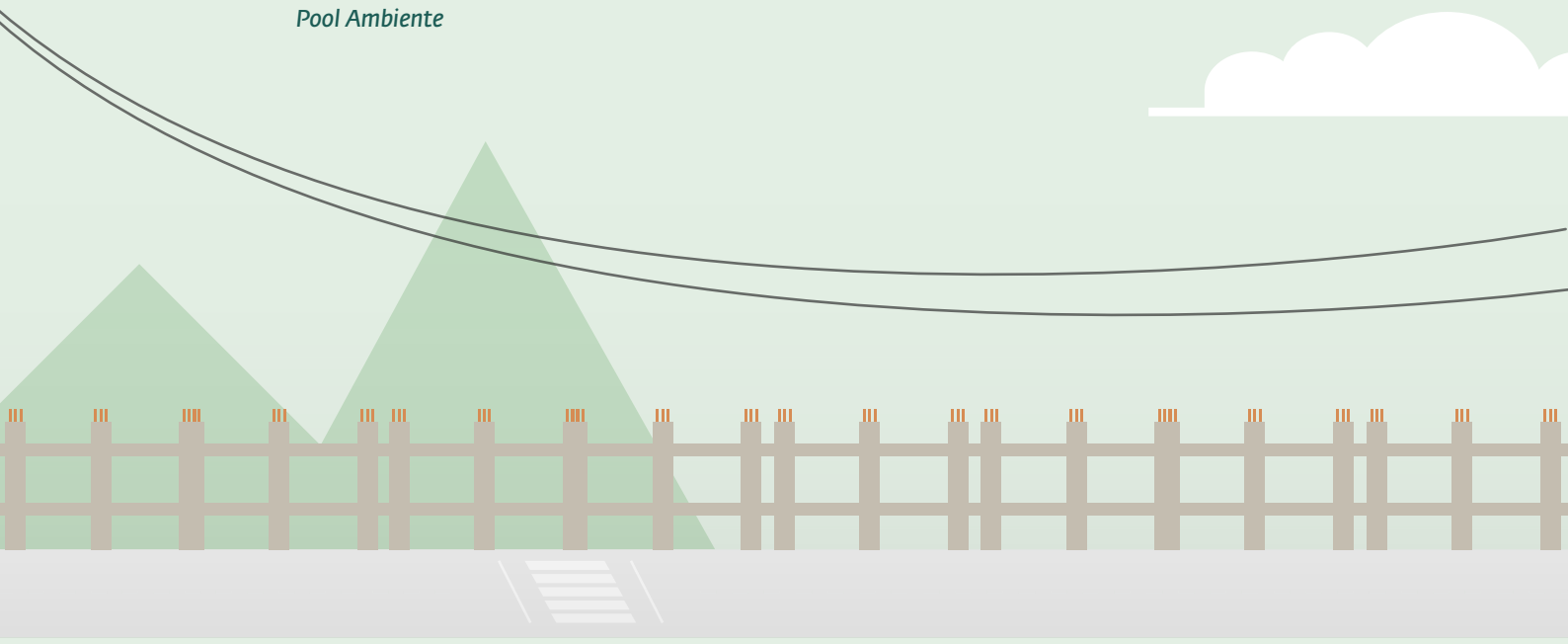
As we have said many times, it is, first and foremost, a cultural issue.

In particular, it is important for the competent authorities to commit themselves to strengthening environmental policies by focusing first and foremost on prevention, which must be central and a priority in this sector as it is in health and safety at work, and by promoting the wider use of insurance to cover environmental damage. Companies should take responsibility for accurately assessing the environmental risks associated with their activities and take the necessary measures to mitigate them.

In conclusion, a concerted effort by all stakeholders is needed to address the issue of environmental risks. Only through coordinated and decisive action can we protect our planet and ensure a sustainable future for future generations.

We look forward to bringing you the next report on risks and damage to the environment

Pool Ambiente



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