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instrument of the
European Community



DERRIS

Climate is changing.
Reduce your risks.

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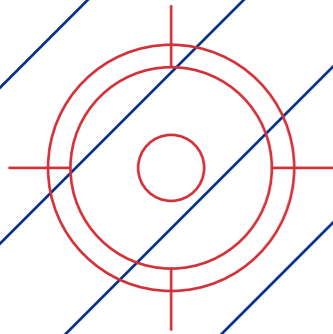
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The climate is changing. We are reducing the risks.

The slogan introducing the Life Derris project contains an important truth: we are experiencing a period of extreme environmental and climate turmoil, caused primarily by human activity. This truth has direct repercussions on the lives and work of all of us.

The exponential increase in the number of climate events we are witnessing with increasing frequency significantly impacts especially small and medium enterprises (SMEs).

Worldwide, 4 SMEs out of 5 fear the impacts of climate change on their business. Italy is one of the countries in which businesses most underestimate the impact of this type of risk. Indeed, in a recent study, 37% of the businesses interviewed were not expecting any negative effect on their operations¹.

So is there really nothing to fear?

In reality, flooding, extreme rain, landslides, heat or cold waves and other extreme weather events are an ever-increasing risk for Italy. The damage caused by these disasters has serious repercussions on the economic stability and growth of the affected areas. **In Italy, SMEs do not have sufficient tools to assess and manage these phenomena.**

¹ / Source: Zurich, Potential effect on business of small and medium enterprises (SMEs) due to climate change in 2016, Global survey report, November 2016

The climate has changed

The Earth is 4.5 billion years old, and the climate has always changed throughout our planet's history, becoming gradually hotter or colder for extended periods of time.

However, in recent decades, the climate has changed very quickly, and scientists agree that this does not depend solely on natural causes.

Global warming over the last 50 years has essentially been caused by humans, or greenhouse gas emissions (carbon dioxide, methane, nitrous oxide, aerosol particles from industrial activity), which hinder the Earth's cooling because they slow down infrared rays, which transport heat away from the surface of the earth into space.

The impacts of climate change in Italy

From 2010 to date, 126 Italian municipalities have recorded significant impacts, with 242 weather phenomena. In particular, there were 52 cases of flooding from heavy rainfall, 98 cases of damage to infrastructure from intense rain, 8 cases of damage to historical heritage, 44 cases of events including landslides caused by intense rain and tornadoes, 40 events caused by rivers overflowing their banks.

In addition, there were 55 days of electrical blackouts due to bad weather, with severe consequences, also for businesses that had to slow down or shut down operations.

Out of all the Italian municipalities, 88% are in areas considered to have a high hydrogeological risk, and nearly 7 million people live or work in these areas.

These extreme events also pose risks to personal safety; **from 2010 to 2016, flooding alone resulted in the death of more than 145 people in Italy and the evacuation of more than 40 thousand people.**

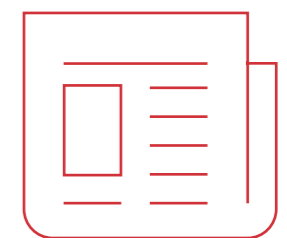
In Italy, there are 1,642,165 businesses exposed to flood risk.

² / Source: Legambiente, Italian cities responding to climate challenges, May 2017

From 2013 to 2016, in response to damages caused by floods or landslides amounting to roughly € 7.6bn, the State responded by allocating around 10% of the amount necessary².

90% of SMEs that are forced to stop production for more than one week as a result of a catastrophic event fail within one year.

The Derris project offers concrete responses to these problems by building a bridge between the insurance world, the Public Administration and businesses, and providing specific knowledge and tools for the prevention and management of climate risk.



7 Climate perils

Derris analysed **7 of the main climate perils** that strike or could strike a significant number of businesses in various areas of Italy.



These climate events are those that DERRIS invites businesses to consider, regardless of whether they have been impacted by one of them. Indeed, the project's objective is to help SMEs become more aware of the risks to which they are exposed, so they can decide which initiatives to take. For each of these perils, Derris has developed a map, to provide each business with an indication of the hazard level of its specific geographical area in terms of the likelihood as well as the intensity of any events.

Floods

The power of water and the strength of rivers overflowing their banks are a particularly worrying disaster for Italy, where 70% of municipalities are at hydrogeological risk and industrial facilities are often located in the riskiest areas.

Are you prepared?

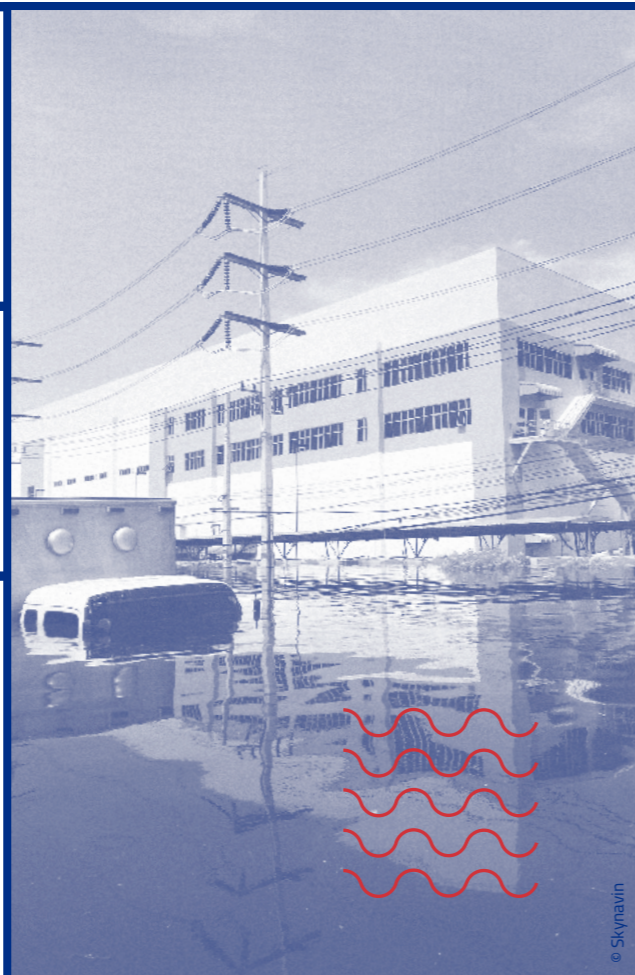
TWO QUESTIONS

- > Are your company's goods and equipment stored on the ground?
- > Have you installed devices like dams and retaining walls?



TWO ANSWERS

- > Placing goods and machinery at least 12 cm above the ground (on pallets or scaffolding) is an important measure to prevent damage from flooding.
- > Mobile or fixed barriers are capable of keeping the waters at bay during the risk management phase



© Skynavin

Rain

We are used to it, it is a common weather event that does not upset us, but when it rains continuously for days, or it is particularly violent, rain is capable of causing serious damage to businesses.

Have you taken the proper measures?

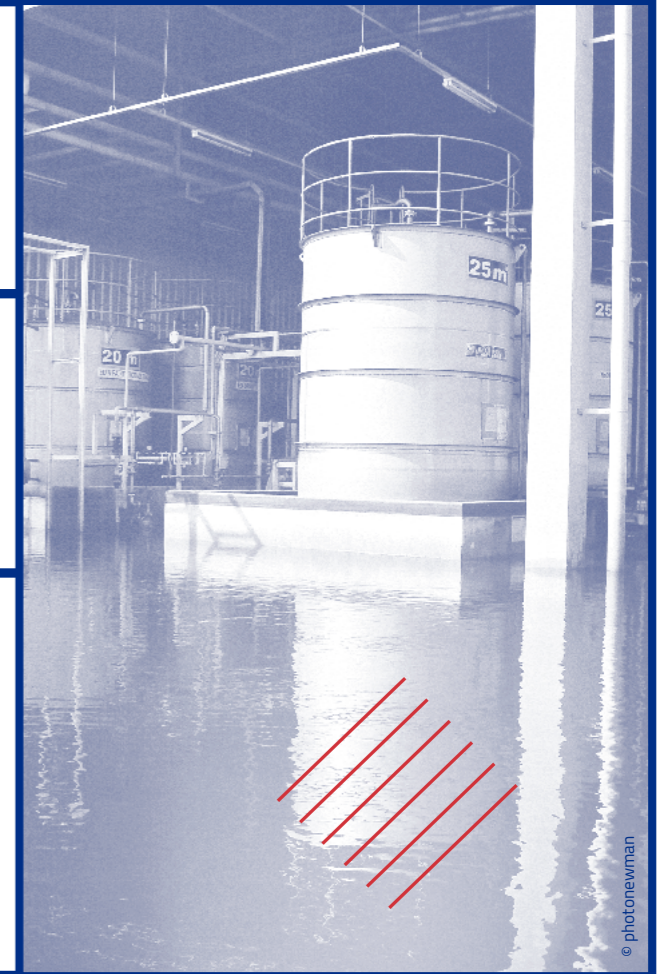
TWO QUESTIONS

- > Have you cleaned the gutters?
- > Have you installed flood sensors?



TWO ANSWERS

- > Regularly checking the cleanliness of gutters and drainpipes is a valid prevention system in the case of strong rains.
- > Flood sensors are very important in places where particularly vulnerable equipment is located.



© photoneuman

Wind

When wind reaches high speed or turns into a tornado, it may develop a devastating destructive power.

Is your business ready for this scenario?

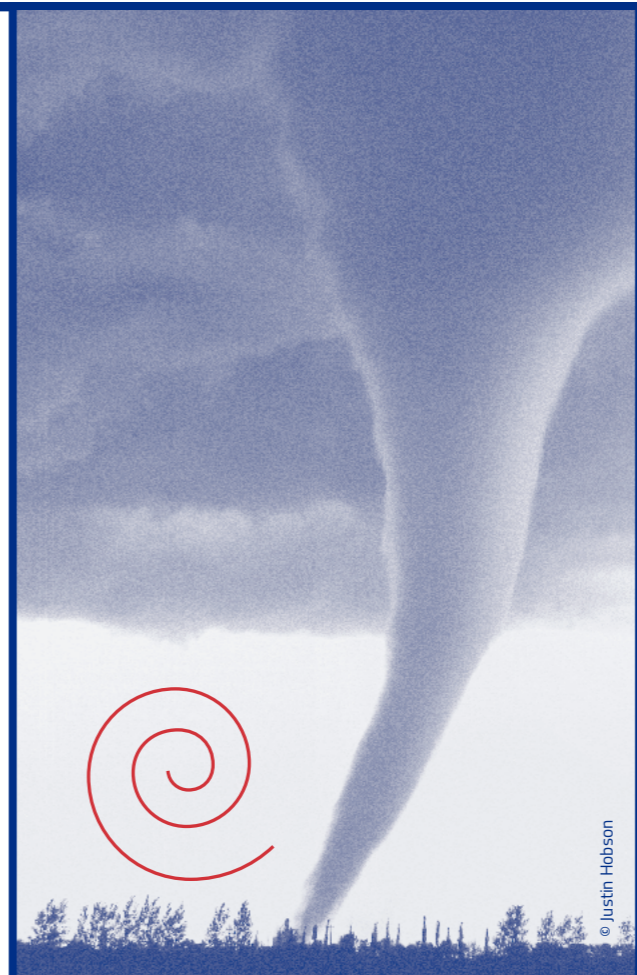
TWO QUESTIONS

- > Have you secured your outdoor plants and structures?
- > Have you considered the conditions of trees close to your facilities?



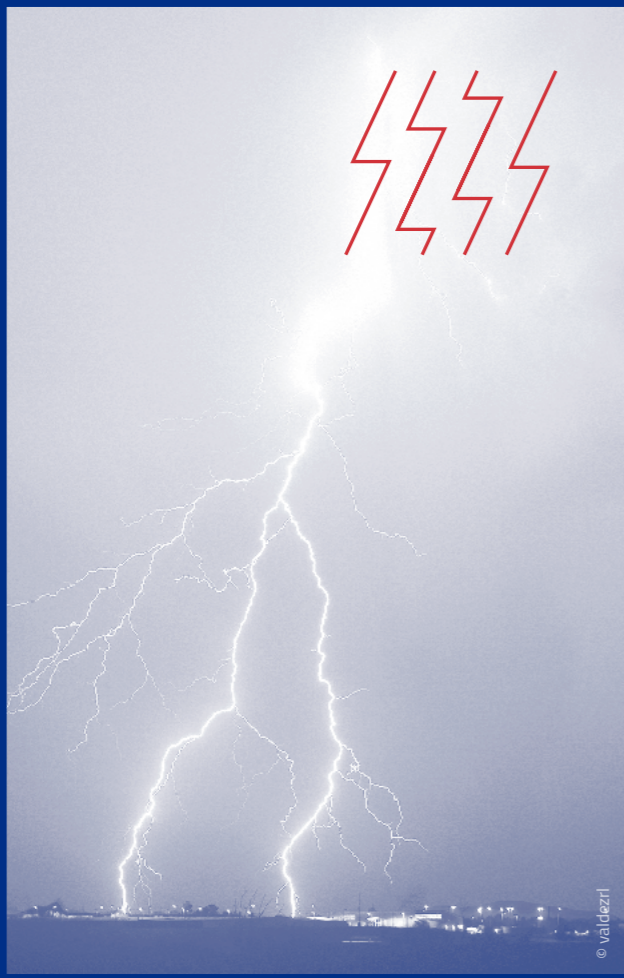
TWO ANSWERS

- > Prevention of wind-related phenomena begins with an effective anchoring system and the selection of stress-resistant materials.
- > It is always better to avoid the presence of tall trees close to buildings.



© Justin Hobson

Lightning



Lightning is an atmospheric occurrence which even visually implies danger to us. The powerful electrical discharges of lightning can cause serious damage to electrical plants and equipment.
Have you taken all of the necessary precautions?

TWO QUESTIONS

- > Are your buildings protected against lightning?
- > Have you installed an uninterruptible power supply (UPS)?



TWO ANSWERS

- > Lightning rods or surge protectors are a valuable protection system, because they conduct the electrical current to the ground.
- > A UPS secures your equipment from the damage that may be caused by lightning, due to direct induction or the propagation of voltage surges.

© valdezr1

Temperatures

Ongoing climate change is most clearly demonstrated by the large temperature surges and drops we are witnessing more and more frequently. From impressive heat waves to sudden falls caused by unexpected cold waves.
Is your business prepared for these sudden changes?

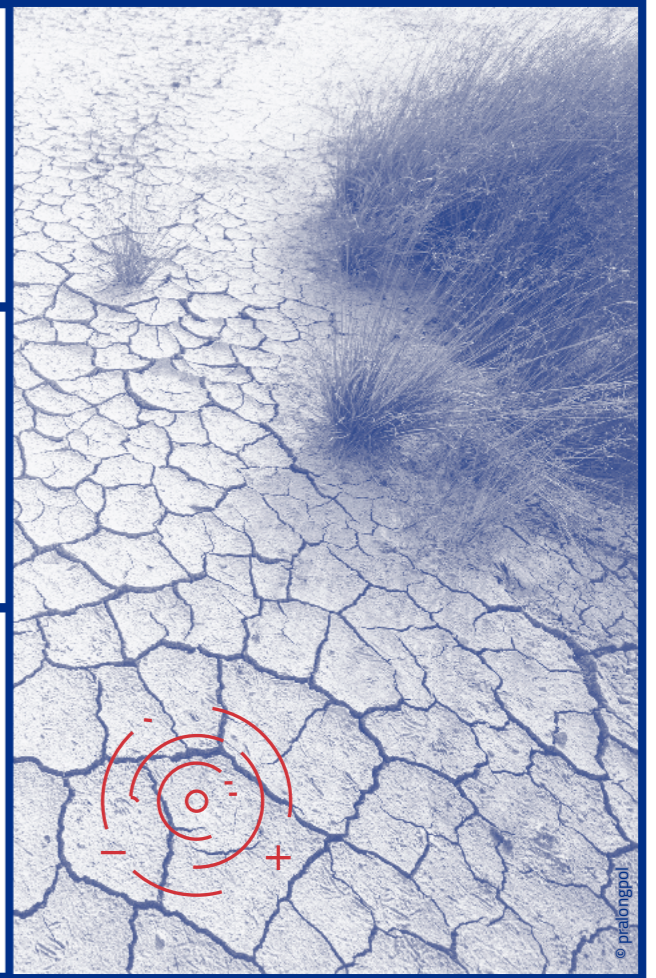
TWO QUESTIONS

- > Have you adopted insulation and/or roofing measures for your building?
- > Have systems been put in place to monitor the temperature of goods or materials, to warn when temperatures have reached a dangerous level?



TWO ANSWERS

- > Creating green roofs, hanging gardens or vertical greening systems increases a building's thermal insulation and reduces heat leakage.
- > The installation of automatic temperature detection systems, with signalling devices in monitored areas, represents a valuable risk management tool.



© pralongo

Hail

When large pieces of ice rain down from the sky, the effects can be catastrophic and extremely widespread: devastated crops, ruined machines, damaged roofs, doors and windows.
Is your company safe from this peril?

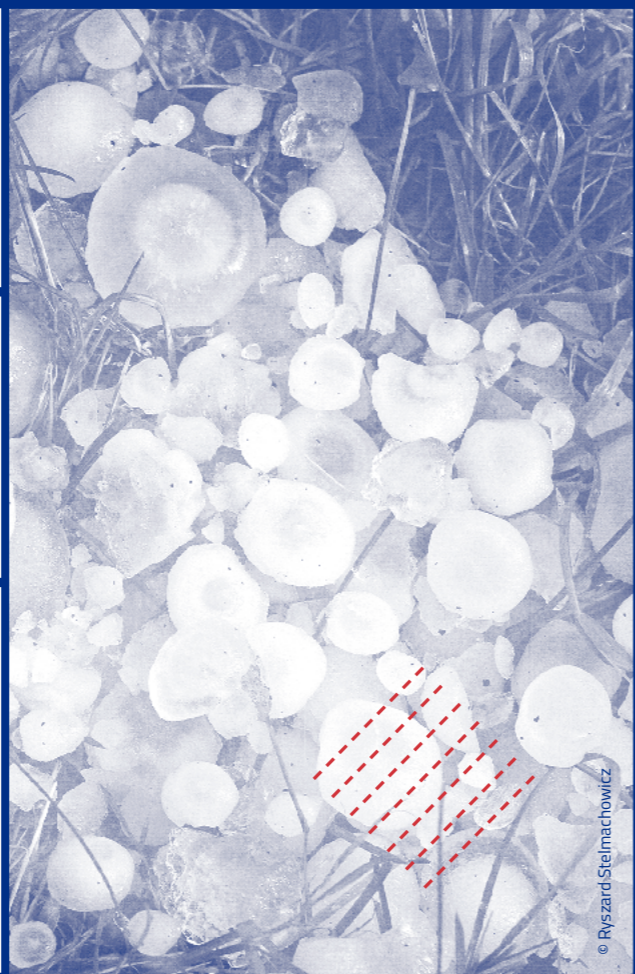
TWO QUESTIONS

- > Does your building have fragile elements like large glass windows or skylights?
- > Do you have goods or machines in an uncovered area?



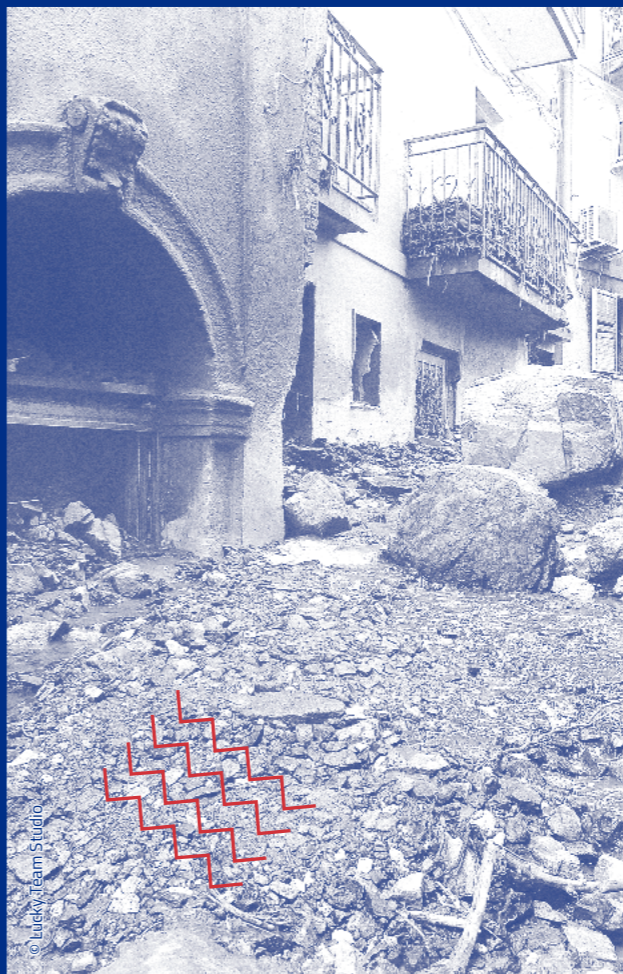
TWO ANSWERS

- > It is important to check the conditions of these fragile elements and prevent possible hail damage by installing protection systems.
- > To protect goods or machinery exposed to the risk of hail, you can use special anti-hail netting.



© Ryszard Stelmachowicz

Landslides



© lucky Team Studio

Landslides, landfalls and other types of erosion are capable of changing the landscape very quickly, causing damage which at times is irreparable. Seventy percent of Italian municipalities are at hydrogeological risk.
Have you already done everything possible to protect your business from these events?

TWO QUESTIONS

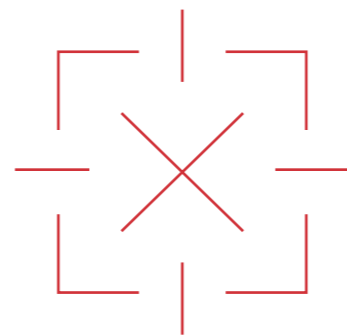
- > Have you conducted the appropriate inspections with local institutions?
- > Have you carried out structural interventions and containment works?



TWO ANSWERS

- > Collaboration with local authorities can support effective prevention measures, based on the danger classification of the area where the facility is located.
- > The construction and maintenance of defensive and containment works like retaining walls, anchoring, rockfall nets and micropiles are all good ways to protect your business from the risk of landslides.

Combatting risks



Are Italian small and medium enterprises really capable of handling these risks, preventing them and counteracting their effects?

All too often, limited budgets and their small size cause SMEs to underestimate the consequences of having no risk control, thus losing sight of a fundamental point to fully comprehend the issue: **risk, if understood and managed, can become a significant opportunity to reconfigure business activities, creating added value and significant competitive advantages.**

Resilience is the capacity to absorb disturbances while maintaining the same structure and operating procedures, the capacity to self-organise and adapt to stress and change.

Why it is important to be prepared

- > Because the costs of a crisis may be dramatically high for the company
- > Because to most effectively manage a crisis, it is necessary to prepare "before" the event occurs
- > Because customers don't wait. If a company is forced to shut down its business, its customers will only take a few days to find other suppliers on the market

7 Steps for a Resilient Business

Every business, even the smallest, must always protect its tangible and intangible production assets: in essence, they need **to safeguard the fundamental elements that underlie their value creation processes.** The risks deriving from climate change can totally undermine a company's ability to exist or resist in the market.

Safeguarding the company's assets, managing emergencies and guaranteeing operational continuity after a disaster: these are the 3 fundamental steps to making a company resilient.

To do this, Derris has identified a process consisting of 7 steps, which we have decided to summarise in a Resilience Index that enables any company to periodically check which steps it should take.

The CRAM tool

Do you want to understand which perils your company is exposed to and what you can do to make it more resilient, safe and prepared?

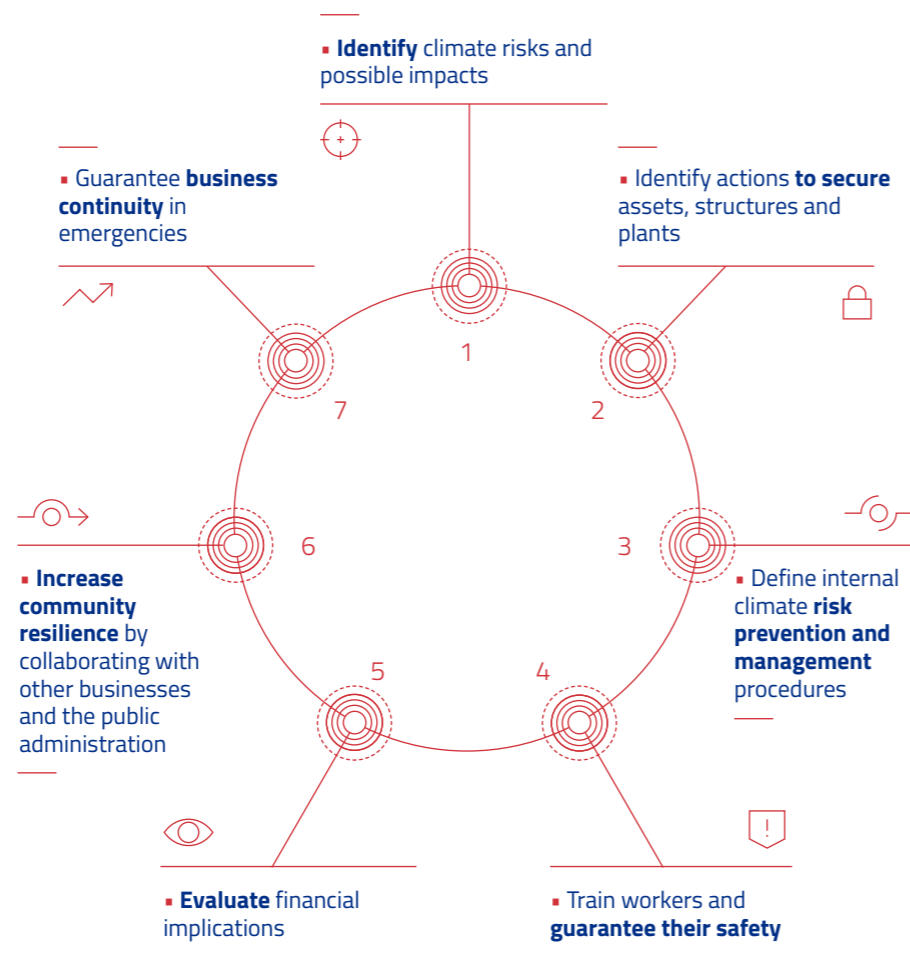
The **Derris CRAM tool** was designed precisely for this purpose: it is an online tool that allows you to immediately analyse the risks your company is exposed to and select the measures you can take for your business.

On the basis of your company's positioning and the risks to which it is exposed, the tool will suggest some actions to be taken to make it less vulnerable to climatic events. At the end, you can check your resilience index and build your own **Adaptation Plan**: this is a document that summarises everything there is to do, who is responsible for it and when to intervene.

We can respond to climate change by taking mitigation measures to reduce greenhouse gas emissions (renewable energy, energy efficiency, transport, better scrap and waste management) **as well as with adaptation policies to increase community resilience.**

These interventions require significant effort and large investments, and are possible only if all sectors of society cooperate: governments, local authorities, citizens and businesses.

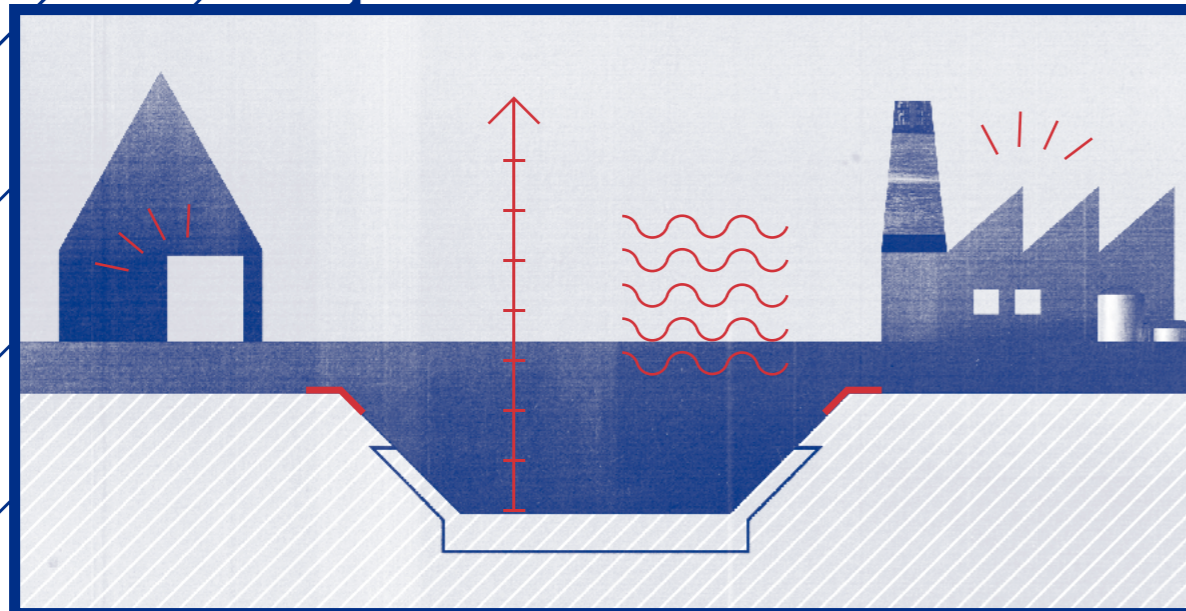
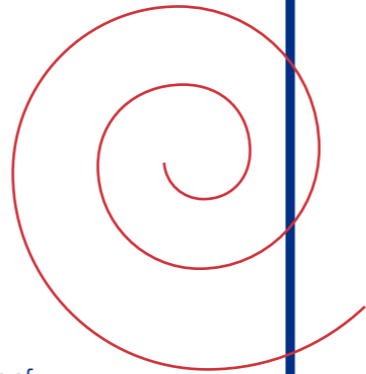
Resilience Index



Interventions

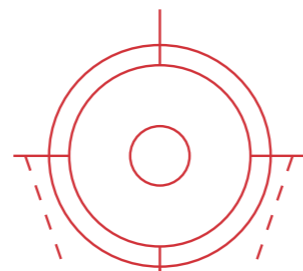
Which measures should we adopt to prevent climate risks?

There are many actions that a company can take to reduce its vulnerability to more or less hazardous climate events. Some interventions regard the protection of a company's tangible assets, like plant and machinery. Others concern the management and organisation of the business. Lastly, some fundamental measures relate to emergency management.



Prevention

Risk prevention refers to all measures, at times very simple (such as periodically checking certain infrastructural aspects) and other times broader in scope (particularly when the company needs renovation work), which reduce the likelihood of sustaining damage.



Management

Risk management refers to all the organisational and management measures that generate adequate procedures for managing risks and intervening in emergencies.

It also includes infrastructural interventions meant to protect company assets in the case of potentially damaging events.

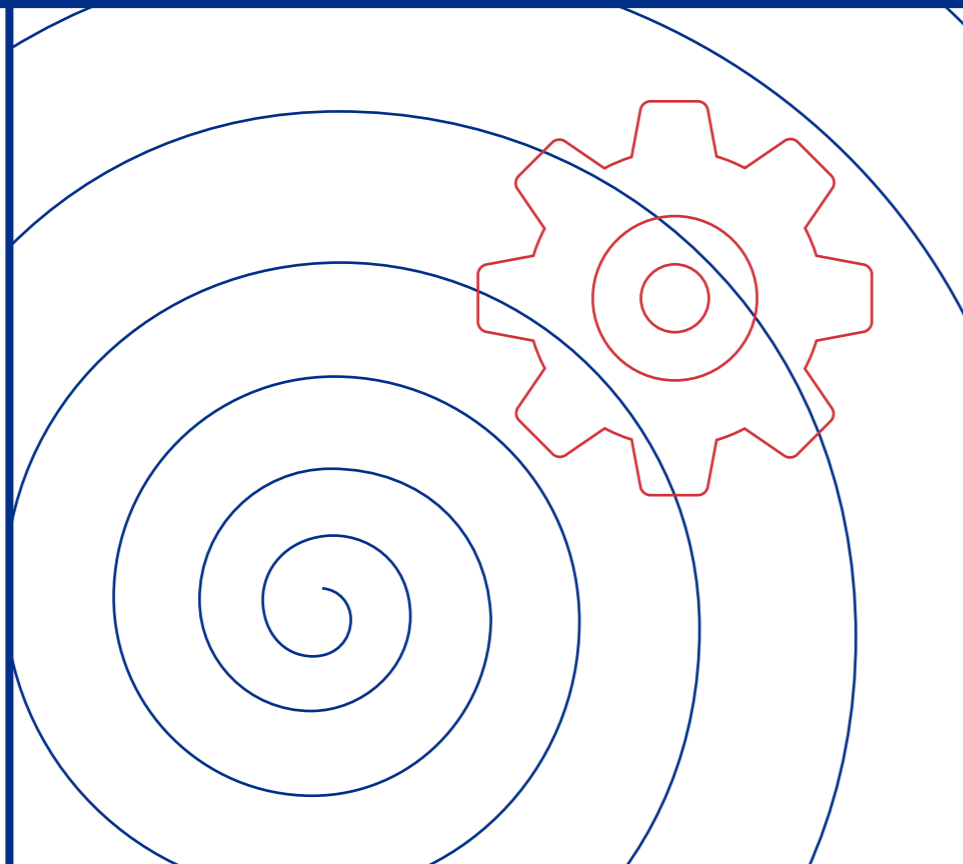


Emergency

If an **emergency** takes place, all measures must be taken as quickly as possible to secure people and assets, and to enact all the procedures defined in company plans to ensure business continuity and speed up the resumption of operations.

This is why it is important for companies to have a specific emergency management plan as well as a contact person capable of coordinating all the operations.

Risk management



All activities entail risk

Companies are exposed to a series of events, be they internal (such as the inadequacy or inefficiency of internal processes or systems) or external (catastrophic/natural events, socio-political events or changes in the economy) which may compromise their operations and in some cases call into question the very survival of the company.

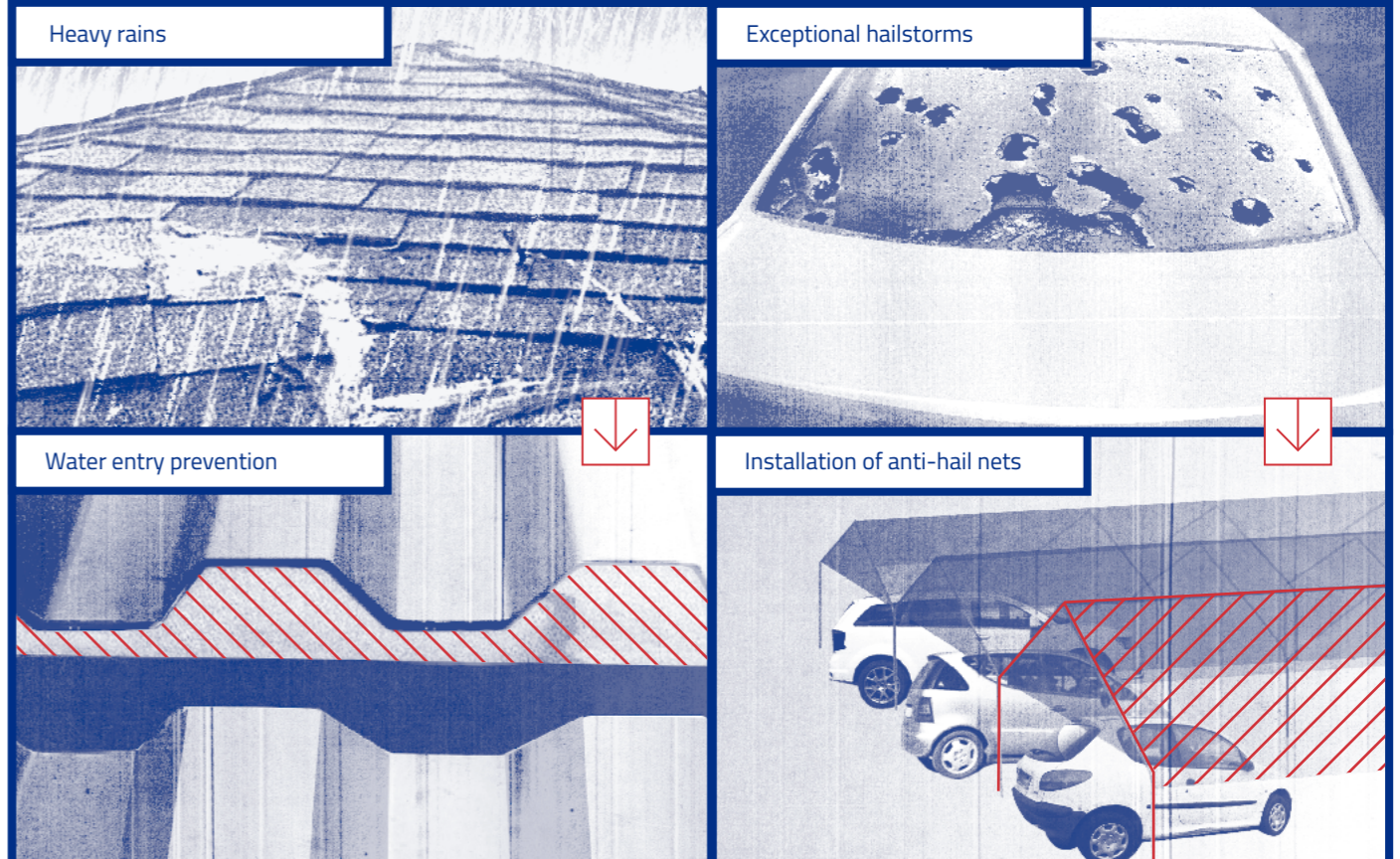
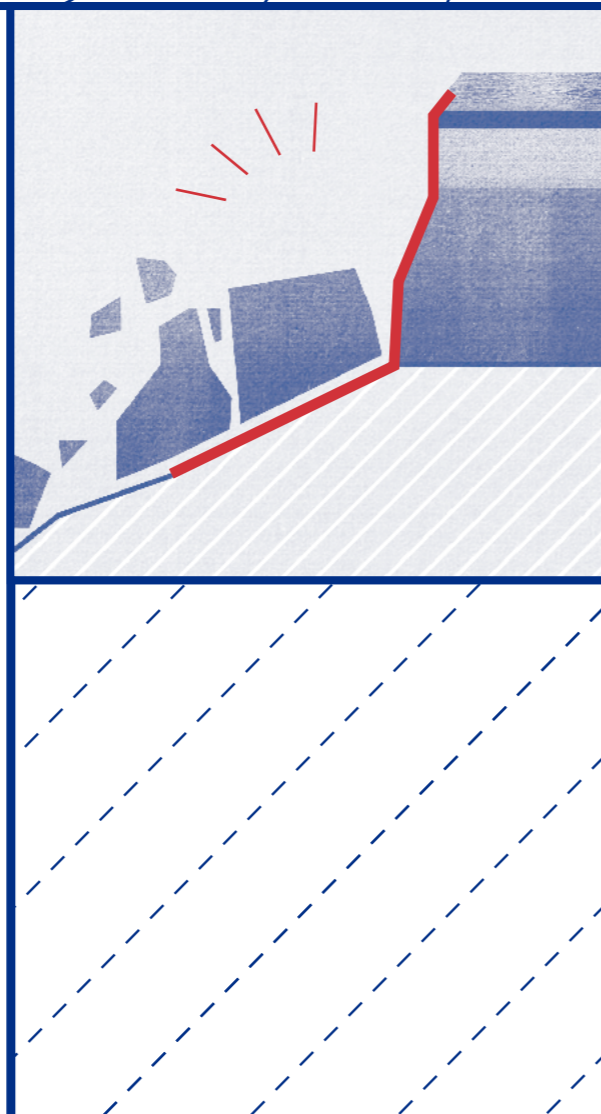
Within a context characterised by increasingly significant and rapid change, business vulnerability has grown considerably.

Therefore, the identification, assessment and sizing of risks are essential to create the proper corporate risk culture to allow risk to be managed.

According to the 2017 CINEAS Observatory study conducted in collaboration with Mediobanca, companies that properly manage risks perform better (their economic performance improves on average by 31%) and potentially have easier access to credit. However, the majority of companies still lack a real systematic and comprehensive approach to risk management.

In any type of company and regardless of its size, the normal course of business processes may be disrupted by unexpected events that can create emergency situations. Many climatic events can trigger crisis situations, with impacts on the company's production capacity, competitiveness in the market, image and reputation

When crisis situations occur, the degree of preparedness and management skills are crucial to the company's survival.



Risk control and management

Risk can be kept under control in various ways:

- > **risk avoidance (elimination) and prevention tools:** these aim to prevent damaging events from taking place (e.g., giving up one of the company's businesses or replacing materials or components).
- > **protection tools:** these aim to minimise any damage to company structures.
- > **risk transfer tools:** these make it possible to save the company from the financial consequences deriving from the event and the ensuing damage. One risk transfer tool is insurance.

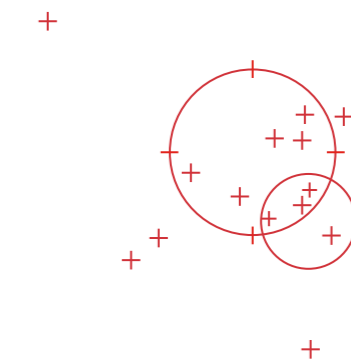
Risk is the combination of 3 factors:

- + **hazard (H),**
- + **vulnerability (V),**
- + **exposure (E).**

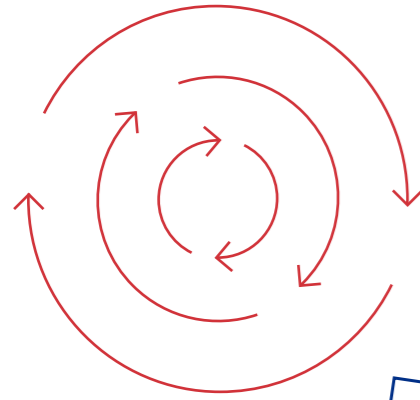
$$R = H \times V \times E$$

Hazard is the likelihood that an event will take place; **vulnerability** is an asset's propensity to suffer damage. Lastly, **exposure** is the economic value of the asset.

How can we reduce risk? By acting on one of the risk factors, for example vulnerability (through risk prevention and management interventions in businesses).



What is risk?



Business Continuity

Being ready to react quickly

The market doesn't wait!
If a company lacks the tools required to react to harmful events and quickly restore full operations, it will lose orders and customers, and will have a hard time recovering its lost market share.

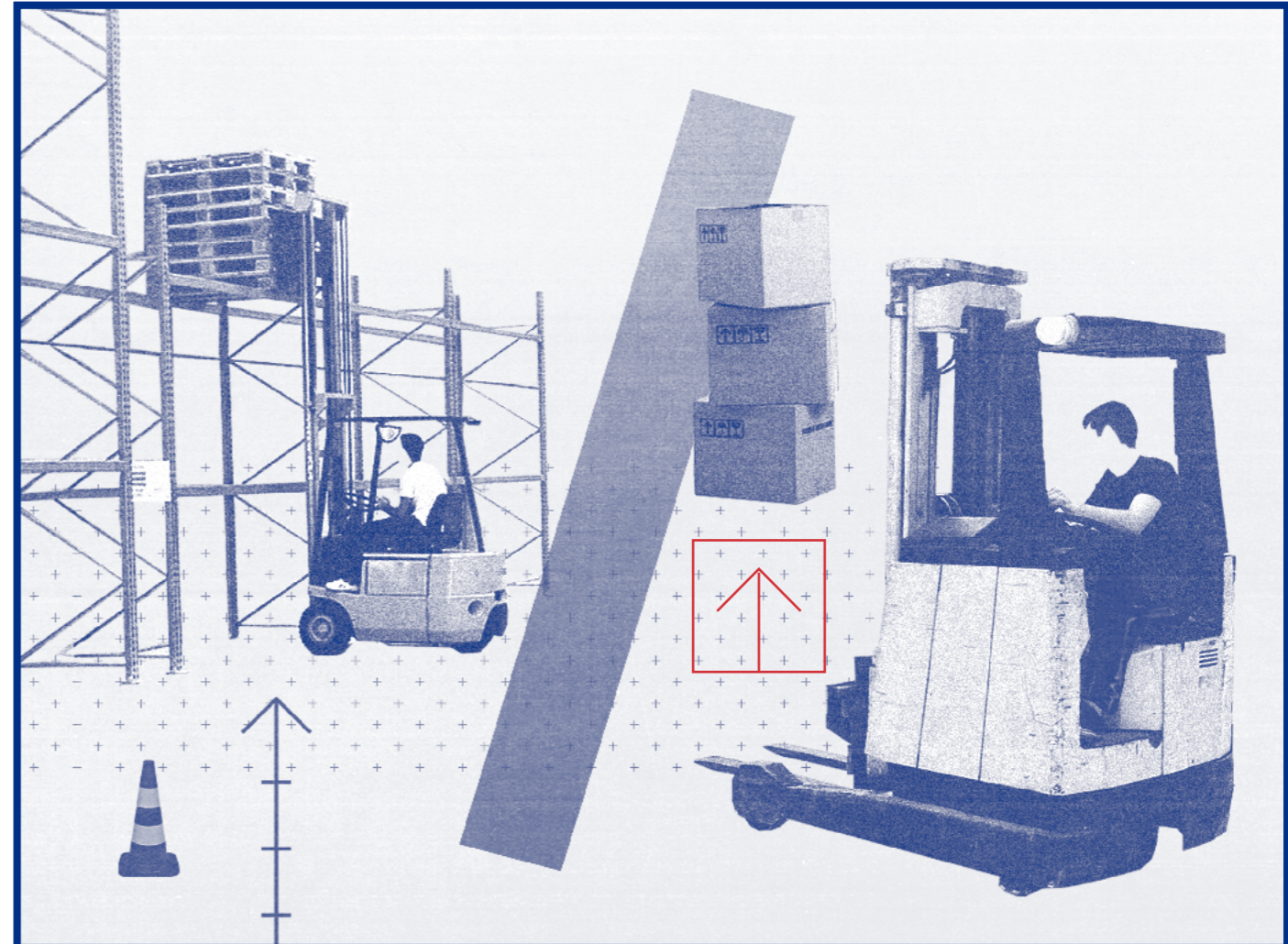
In crisis situations, reaction time is a decisive success factor!

To be able to effectively react to a harmful event and return to prior conditions as rapidly as possible, every company should first define and then implement a **Business Continuity Management** plan.

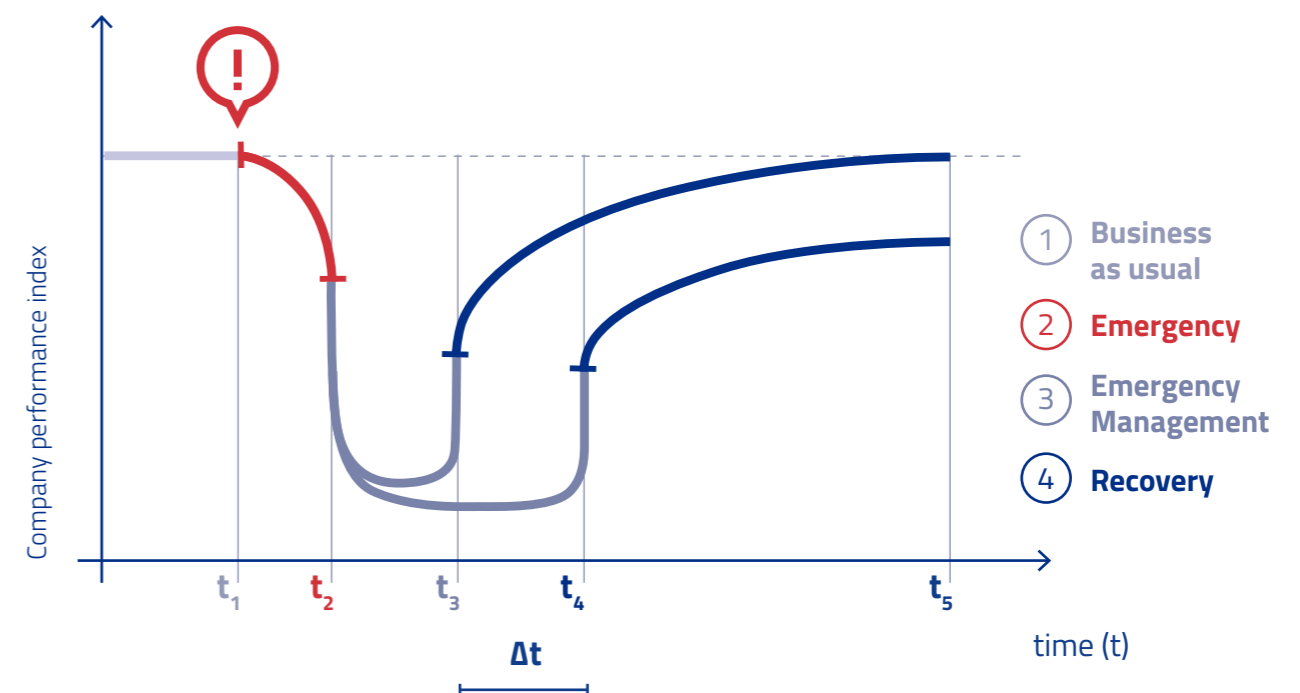
The Business Continuity Plan

This is a systematic plan that brings together various operational plans present within the company (e.g., the Emergency Plan, the Disaster Recovery Plan and the Crisis Communication Plan).

The goal is to limit business disruption to a level acceptable to the company, while avoiding or reducing the risk of losing market share in the wake of business discontinuity.



Typical course of a crisis



What is the role of insurance?

In Italy, the traditional model of managing damage caused by catastrophic events, which is exclusively public in nature, has reached such a level of economic unsustainability that already in 2012, with law decree no. 59 of 15 May, the State declared that it would no longer cover reconstruction costs.



Therefore, the State is no longer capable of providing compensation for all damages. For example, from 2013 to 2016, in response to damages caused by floods or landslides amounting to roughly €7.6bn, the State responded by allocating around 10% of the amount necessary (Source: Legambiente).

Italy is a historically under-insured country.

Despite its high risk exposure, the level of penetration of insurance against the risk of natural disasters in Italy is one of the lowest among industrialised countries.

In recent years, awareness has increased with regard to the need to consider natural disaster prevention and management models that take a public-private approach. Even international organisations (e.g., the OECD and the European Union) have focused strongly on the fundamental role of insurance in reducing the economic impact of catastrophic events, and for the promotion of virtuous behaviour through greater awareness of risk prevention and management.

As regards the fight against climate change, the role of insurance is much broader because insurance companies have experience and specific knowledge that makes them capable of providing support and tools to:

- > **understand and assess risk**, increasing public awareness of catastrophic risks and understanding the most vulnerable areas for citizens and businesses alike.
- > **manage risk and emergencies**, thus contributing to improving resilience to extreme climate events.
- > **manage residual risk**, by proposing insurance solutions.

A company cannot reduce all risks, and it cannot do it alone.

This is why synergy and cooperation are needed among all key players:

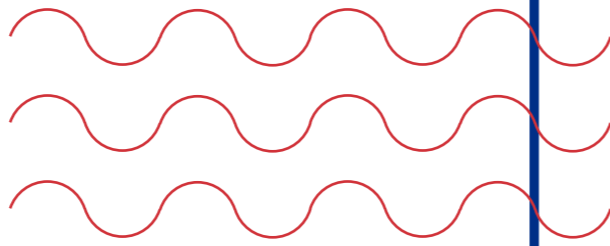
- > **Institutions** present within the community.
- > **Insurance** companies which have knowledge and incentive and risk transfer tools.
- > **Businesses** that need to protect themselves.

Insurance for reinsurance

Insurance, as we know it today, is an effective response to a basic human need: the need for security, to protect ourselves and those dear to us from adversity (natural disasters, wars, hunger, illness).

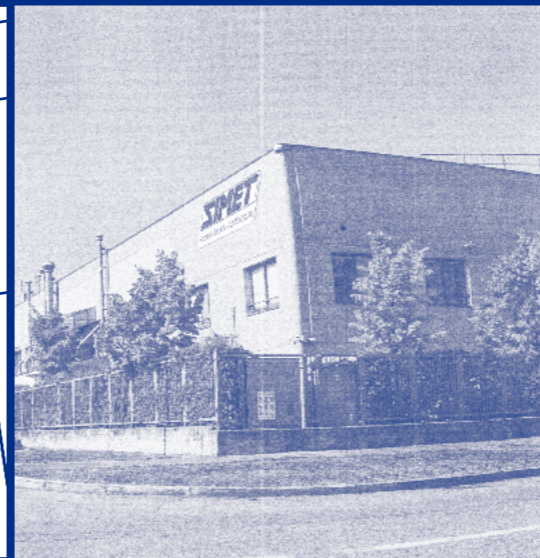
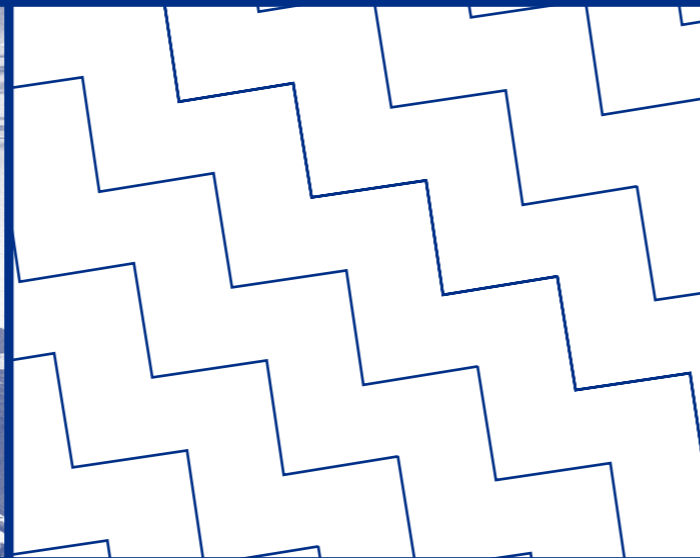
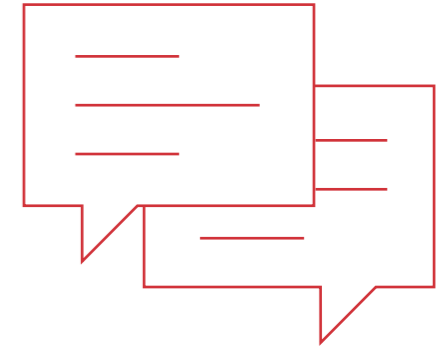
Insurance is a contract that guarantees financial coverage when a harmful event or loss takes place (non-life insurance) or in relation to events in human life (life insurance). Therefore, the business transfers to the insurance company all or some of the monetary consequences of the harmful event.

Derris Testimonials



Silvia Marengo, Simet
Title: Owner

Metalworking sector
(systems for metal processing on behalf of third parties)



Why did you decide to participate in Derris?

A few years ago, our company was struck by lightning, which damaged some service facilities, including our alarm system. Our production activities were almost completely shut down for a few days, and I understood that in these cases the damage is not only economic, but that it also impacts the safety and production capacity of the company. When that happened, we didn't sleep for two days to make sure no one went inside!

What is the main lesson you learned?

Awareness of the risks that my company actually faces. Climate events happen sooner or later, and if you haven't taken action in advance, the damage can be very serious.

Why would you advise other companies to use the Derris tool?

To discover the risks your company faces that you hadn't thought of. With the tool you understand the risks and then you can ask yourself what you should do to reduce the economic damage and especially to secure your company assets and production.

Why did you decide to participate in Derris?

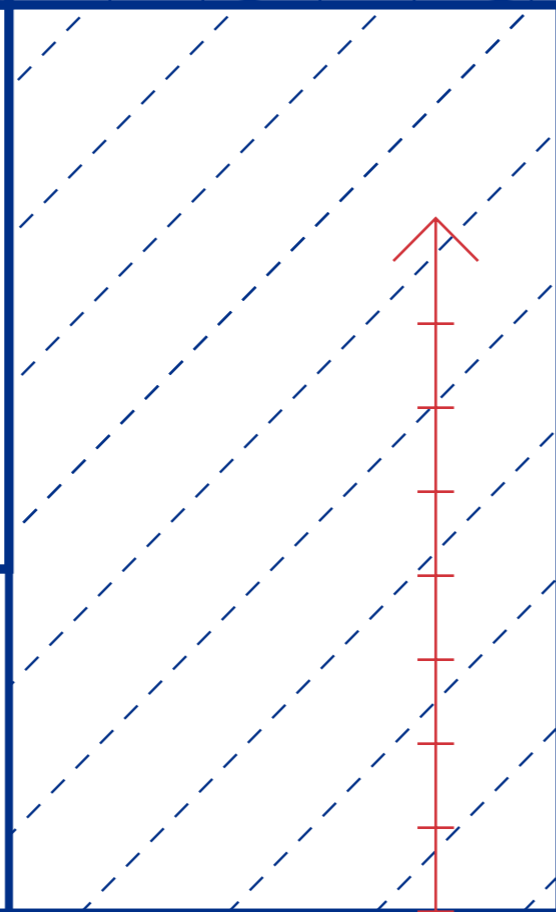
Climate change is under way and it is important to assess risks and create an action plan to reduce them. In addition, as the safety manager, I am very concerned with the safety of our people and I wanted to understand how to avoid accidents and damage in the case of a climate emergency.

What is the main lesson you learned?

To look with different eyes at things I did not consider before. For example, inspecting storm drains and gutters are simple actions that can prevent significant damage. So, we learned to look at the matter of risks in our company from a different perspective. And we also understood how important it is to interact with nearby businesses. By organising with each other to manage a disaster recovery plan, we can reduce costs and count on more people to act in a coordinated way.

Why would you advise other companies to use the Derris tool?

Most of the things to be done can be managed internally or by training the staff, with measures that are almost always low cost, so that when an emergency takes place, everyone knows what to do.



Marco Giardina, Zayon srl
Title: Technical Director

Metalworking sector



Why did you decide to participate in derris?

Initially, we were urged to participate by our trade association and along the way we realised that it really was useful to study the issue in depth to understand how to reduce the consequences of climate events on our company.

What is the main lesson you learned?

We were quite aware of the risks that we face because over the years we have already suffered some damage, but it was useful to see the suggested measures to be completed to reduce our risks, also based on the experience of other businesses. However, we realise that on many aspects the intervention of the public administration is fundamental because if action isn't taken in advance, for example by properly maintaining rivers or sewer systems, the interventions taken by an individual company are only palliative.

Why would you advise other companies to use the derris tool?

To have a clear idea of the possible consequences for your company of climate events and the countermeasures that can be taken.

Alessandro Fioraso, Piemonte Cioccolato
Title: Owner

Food sector
chocolate production and processing





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Community

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DERRIS

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