Coverage of extraordinary risks derivables from climate change [1]

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Insurance is of paramount importance when needing to adapt to the current and future risks of climate change and its consequences (often consisting in natural catastrophes and extreme hydrometeorological phenomena), which directly affect the activity of the insurance sector. The latter is forced to take measures to assess the change in the covered risks and seek solutions that allow reducing damage and increasing the resilience of

society, even when the latter also plays a fundamental role in their mitigation.
Spain, where insurance is ubiquitous, has an extraordinary risk coverage system that includes the main hydrometeorological hazards. The system is established by law and managed by the Insurance Compensation Consortium (Consorcio de Compensación de Seguros - CCS), of which it is a fundamental part. It increases stability and protects policyholders. The articipation of the private insurance sector is essential for its proper functioning. This coverage places us in a favorable position to address the insurance challenge of climate change.

Case Study Description

Challenges:

Climate change can have a major impact on the insurance sector. In Europe, according to reports from the Intergovernmental Panel on Climate Change (IPCC) and from the European Union (EU) itself, the most likely risks include:

- the increase in the duration and frequency of heat waves, particularly important in urban heat islands
- a higher incidence of droughts, risk of forest fires, soil degradation and earth movements in semi-arid regions such as the Mediterranean basin
- reduction of the average annual precipitation and increase in torrential rains, with waterlogging of land and towns due to water accumulation or runoff (rainwater, melting or overflowing)
- coastal flooding due to an increase in the mean sea level, with damage to infrastructure and loss of soil due to salinization
- greater presence of strong winds in northern areas, decreasing relatively in southern areas, with specific impacts
- the increase in the frequency and intensity of other smaller scale phenomena

Under these conditions, the expected increase in losses due to meteorological causes can potentially harm the solvency of insurance entities by failing to adjust their risk management approach or by resulting in an increase in the premiums that reduces insurance coverage and ultimately renders it unfeasible, requiring probably future capital increases in order to cover the losses.

In this sense, the impacts of climate change on the insurance sector can pose three types of risks that must be faced:

- physical risks, arising directly from the events and related impacts (damage to people or property, interruption of production chains, loss of profits, shortage of resources, ...);
- financial risks of transition towards a lower carbon economy, translated into the reevaluation of companies and goods that make an intensive use of it and the speed with which it occurs;
- liability risks, as a result of claims by parties affected by climate change seeking compensation from others whom they believe are responsible for the damage.

Therefore, solutions must be found to ensure correct risk assessments are performed such that the effects of climate change can continue to be insurable through probabilistic models that include defined scenarios that reflect the wide range of future possibilities. Thus, this would enable having an adequate diversification of extreme risks and determining their quantitative valuation, so that adequate provisions of capital may be available.

In addition, risk mitigation depends partly on the insured party himself, which is also a fundamental part of the affordability component of the insurance. Thih is why an important challenge is having a good disclosure and awareness policy of the possible risks derivables from climate change.

On the other hand, another important challenge for the insurance sector will be to provide adaptation measures especially aimed at those populations that are most disadvantaged and/or most impacted by the effects of global change. Many of these measures should be institutional and coordinated among the insurance sector, the government, institutions and the general population, and will probably include new economic and legislative options in the coming years that support risk reduction and insurance through planning policies, prevention and preparation against extraordinary risks.

In this sense, through Extraordinary Risk Insurance, the Spanish insurance sector has a very useful and solvent financial tool to face the eventuality of increased risk and the danger of extreme and particular events as a consequence of climate change, which helps increase the recovery capacity and resilience of people, companies, institutions and populations.

Currently, the Insurance Compensation Consortium (CCS) covers a wide range of extraordinary risks caused by natural phenomena (floods, winds, ...). Risks considered “extraordinary” are the result of a dialogue between the public and private sectors, for example, through the CCS Board of Directors. There are certain hydrometeorological risks, such as direct damage from precipitation - notably hail - or winds below 120 km/h that are covered directly by private insurers. Other risks not considered extraordinary to date, which could perhaps be considered as such in the future, include, for example, the effects of heat waves on people's health or pandemics.

Objectives:
The essential characteristic of the extraordinary risks system is the ability to automatically provide the insured party with coverage against some risks that are considered extraordinary, through their mandatory inclusion in the policies policyholders contract with insurance companies of their choice.

This allows for the same policy to offer double coverage:

- ordinary risks, borne by the insurance company
- extraordinary risks, assumed by the Insurance Compensation Consortium (CCS), a public company attached to the Ministry of Economic Affairs

In this sense, among the extraordinary risks caused by natural phenomena covered by the CCS are those related to flooding, marine phenomena (coastal flooding), strong winds (gusts exceeding 120 km / h and tornadoes), earthquakes or tidal waves, volcanic eruptions and falls of astral bodies and meteorites.

Policyholders pay a surcharge for this coverage on the insured amounts, which is charged by the insurance company together with its premiums and is subsequently transferred by it to the CCS. Thus, the CCS acts as a direct insurer in cases of claims caused by natural catastrophes of hydrometeorological origin with the greatest impact. Other hydrometeorological risks such as hail or strong winds below 120 km/h are covered directly by private insurers.

By covering such extraordinary risks, compensantion is provided for both goods (with some exceptions) and personal damages and possible loss of benefits after an event, based on assessments conducted by experts appointed by the CCS, without placing constraints on other assessments the insured party or the insuring entity may bring to the procedure.

In addition, another objective of extraordinary risk insurance is to reduce damages and increase the resilience of society. To this end, the CCS cooperates with institutions competent in the knowledge and management, prevention and reduction of these risks, both by sharing their compensation damage data, which are essential for identifying risk areas and estimating trends in the evolution of risk, and in the form of awareness-raising and dissemination initiatives. The latter influence the behavior of the policyholders themselves (risk awareness, self-protection measures, ...), which can help to reduce the overall risk and offset the possible increase in danger as a result of climate change, along with a decrease in exposure and vulnerability.

Adaptation measures implemented in the case study:
Structural/physical: Services [3]

Institutional: Economic options [4]
Institutional: Laws and regulations [5]
Institutional: National and governmental policies and programs [6]
Social: Information options [7]

Solutions:

The transfer of risk through insurance is itself an adaptation measure.

Climate change can have an important impact on the insurance sector, which nevertheless has an optimal tool via the CCS system to cover the risks derivables from it. This tool has been very useful and effective to date.

Despite this, considering the high component of uncertainty about the possible manifestation of global change in the face of different anticipated time-space scenarios, forecasts point to an increase in dangerousness, fundamentally with regard to extreme hydrometeorological and climatic events. This implies an increase in possible damages and losses in the coming years, which could, potentially and theoretically, harm the solvency of insurance entities by hindering their ability to adjust their risk management schemes or implying an increase in premiums that reduces insurance coverage, rendering it ultimately unfeasible and with the probable need to increase the capital to cover such possible losses. Spain, with an insurance system based on a public-private partnership and a very broad insured base, is, perhaps, in a comparatively better situation than other neighboring countries.

Nevertheless, although the Spanish insurance coverage system has proven effective, sustainable and flexible, solutions must still be continuously sought to correctly assess risks in such a variable and dynamic scenario of possibilities, so that the effects of climate change can remain insurable. It is essential to know both the value of extreme risks and their possible diversification, in order to have the adequate provision of capital, by sector, for hedging purposes.

In this sense, although in recent decades there has been an increase in direct and insured losses due to hydrometeorological causes, there is a general consensus that the main cause of this increase so far is not the growing hazards, but rather that of exposure, derived from economic growth itself and from the greater concentration of population and goods in vulnerable areas. Thus, it seems logical to act on exposure and vulnerability. Actions outside the scope of the insurance sector such as improving early warning systems, actions on land use and building regulations or the management of emergency situations have a direct impact on this. From the insurance point of view, continuing to offer universal and affordable coverage is the basis for the proper functioning of the system, stressing the need for insurance and for it to occur correctly as per the right amounts in order to be able to address catastrophic damage. Likewise, insurance is a source of damage data that helps to analyze risks and identify areas of special risk.

From the regulatory point of view, it is important to set out strategies clearly to better adapt to climate change; it is also important that education programs are implemented to raise awareness of the importance of insurance against extraordinary risks, so that different types of coverage can be designed according to the exposure to risks derivables from climate change and to ensure effective resources can be made available to face eventual claims. This will generate added value when it comes to public policy decisions that shape and define the actions undertaken by the insurance industry, which affect the determination of premiums, the availability of capital and the capacity to deal with claims.

Apart from the Extraordinary Risks Insurance of the Insurance Compensation Consortium, from a market point of view, a phenomenon such as climate change opens the door to new business opportunities due to the new risks that can be covered, although at the same time poses important challenges regarding the way in which this source of uncertainty will be incorporated in the development of the different stages of insurance and comprehensive risk management, considering:

- risk-based premiums can be an incentive to decrease the vulnerability of policyholders
- the reinsurance market may be key to providing capital, which may be a potential attraction for institutional

investors, for example through catastrophe bonds
- some new regulatory frameworks are needed to help increase the sector's resilience to natural disasters

Importance and relevance of the adaptation:
The Intergovernmental Panel on Climate Change (IPCC), established in 1988 by the World Meteorological Organization and the United Nations Environment Program, clearly stated in its 2014 report:

that human influence on the climate system is clear, and the observed climatic changes have already widely impacted human and natural systems
the continuous emission of greenhouse gases will continue to generate warming and long-lasting changes, increasing the probability of serious, extensive and irreversible impacts for the population and ecosystems

All this will cause an amplification of current risks and create new ones, with impacts that can be extremely serious and very different depending on the scenarios at hand, including the following foreseeable results:

- temperatures will continue to rise
- heat waves are more frequent and longer lasting
- the mean sea level continues to rise
- the acidification of its waters intensifies
- in Spain, annual precipitation decreases and torrential rains continue to increase
- extreme winds and associated phenomena increase

In this sense, according to the “Global Risks Report” of the World Economic Forum (World Economic Forum, 2019), the most important global risk at present in terms of impact is the lack of mitigation and adaptation to climate change.

Regarding adaptation to climate change in Spain, which is particularly affected by its geographical location, it is likely that the distribution of its wide variety of settings may be modified or even reduced where appropriate; but the extraordinary risk coverage system maintained by the CCS has already been proven before some scenarios with altered conditions, which are variable and very different from one other, and has so far responded adequately.

If the dangerousness and/or frequency of some episodes should change as a consequence of climate change and facing an increase in risks becomes necessary, the system is prepared and capable of making the corresponding adjustments in terms of coverage (modification of thresholds, assumption of new risks, adjustments to surcharges, ...), and can rely on a constant dialogue and cooperation between the private sector and its counterpart for the management of extraordinary CCS risks.

In addition, the insurance sector itself has underlined its important role as a tool for adaptation to climate change, both directly in terms of risk distribution and by using the extensive registry of damages due to natural disasters available thereto, providing essential information for conducting possible studies on natural risks and their foreseeable variation with climate change.

Additional Details
Stakeholder engagement:
The different stakeholders with which the CCS as an organization interacts are fundamentally:

- the insurance industry
- policyholders in their broadest sense
- the State, owner of the public company
- the supervisory authority
- other stakeholders (external collaborators, other institutions in the insurance sector, ...)
- technical-scientific and academic institutions and bodies with competence in management and knowledge

of the risks covered.

In any case, the main recipients of this extraordinary risk coverage are obviously the insured and, by extension, the insurance brokers, with whom maintaining a close collaboration is essential in order to sustain the entity's own operations and functionality as well as said extraordinary risk coverage. For this reason, the CCS tries to offer them special and adequate care at all times through truthful, simple and clear information, thus streamlining the procedures that affect them and in which it takes part.

Among the channels established to serve the insured, the institutional Internet portal and the Call Center (CAT) have a special impact, both of which are constantly updated and whose objective is to facilitate maximum contact between the insured and the CCS through a growing and gradual broadening of automated inquiry, damage, claim and complaint reporting reception and handling processes.

In addition, the CCS' Insured Customer Assistance Service (SAA), which has proven to be an ideal complement to direct contact channels, attends to possible claims that raise issues where a final ruling has already been issued by the entity's services.

Likewise, the CCS provides face-to-face consultations with policyholders or their representatives, both in the different offices of the regional or provincial delegations and at its headquarters. These are less and less frequent however as practically all procedures can be handled on line or by telephone.

Project interest:

The extraordinary risk coverage system has been transforming and evolving together with the Spanish insurance sector itself, as well as with the Spanish society and economy, and has been operating in a climatic setting like ours, which is particularly complex and varied from a climatic standpoint due to its very geographical position between a temperate and a subtropical zone and an Atlantic marine area and another Mediterranean inland sea area. Furthermore, the presence of the Canary Islands adds even more variability to its area of activity.

To date, the system has proven itself capable of addressing the different claims registered, some of which are of particular intensity and cost, although the number of compensation claims has multiplied and the average annual cost of compensation has increased in recent years. Nevertheless, it should be noted that the number of policies with CCS coverage has also multiplied significantly, maintaining the balance and capacity of the system.

In this sense, the characteristic peculiarity of this system resides in its compulsory nature and universalization through a broad insured base, which provides the insured with an adequate degree of coverage against risks that are considered extraordinary.

The system is based on compulsory public-private cooperation through the inclusion of extraordinary risk coverage in all policies making reference to damage to property, life and accident insurance and possible loss of benefits, which is freely contracted by policyholders from any insurance company.

In accordance with the foregoing, the coverage of extraordinary risks in the Spanish system is based on two basic fundamental principles:

- the principle of compensation and solidarity, which includes compensation between risks, geographical location, handling and temporary compensation
- the principle of collaboration with the insurance industry in the management of the system

As regards its cost, extraordinary coverage is not priced according to the level of exposure to a given risk; instead, it is calculated on the basis of reaching an overall technical balance for all risks covered by the system. In any case, the amount of the premium depends on the type of asset protected and the capital insured in each policy.

On the other hand, the compulsory nature of said coverage extends to the entire population insured by the policies, being this great extension of the insured base the one aspect that allows providing a very broad coverage at a very affordable cost for the insured. The system is self-sustainable and does not require any type of contribution from the budgets of any public administration.

Another system strength is its adaptability and flexibility, having evolved over time according to the needs of the Spanish insurance sector, and facing challenges that have translated into improvements in the coverage regime through the corresponding legal modifications, such as new risks (wind) and new areas (loss of profits, life, ...).

From an international perspective, the uniqueness of the CCS justifies the interest of different risk coverage organizations or associations from different countries in the Consortium's own areas of activity, evidenced by numerous consultations and visits by international delegations to learn about this Spanish extraordinary risk coverage model.

Success and limiting factors:

The fundamental success of the Spanish extraordinary risk coverage system lies with the very Insurance Compensation Consortium (CCS), created in 1954 after the merger of different Consortiums to cover contingencies developed to respond to the losses caused by the Civil War and other major incidents that had occurred. At present, the CCS has different policy areas (automobile civil liability, combined agricultural insurance, environmental or nuclear risks, ...), and is stands out particularly for its coverage of extraordinary risks.

The CCS thus constitutes the central figure of a unique catastrophic damage compensation system in the world, based on its compulsory nature, which provides policyholders with coverage against this type of risk through its inclusion in property damage, life, accident and pecuniary loss policies, which policyholders contract freely with any insurer.

This coverage is therefore universal in nature and compensated by the entire insured base, such that it is priced in a way that seeks the overall technical balance for all the risks covered by the system. The amount of the premium corresponding to each policy depends on the type of asset protected and the capital insured by it.

This allows very broad coverage at a very affordable cost, making the system self-sustainable and not requiring any type of contribution from the budgets of any public administration. Until now, the system has been balanced, efficient and adequate before contingencies (some of special intensity and cost), as well as flexible and sufficient to deal with them with solvency. Although the number of compensations has grown significantly in recent years, the system has also grown in the number of policies and has perfectly maintained its balance and financial robustness.

In terms of limitations, CCS requires the need to evaluate the changes that occur as a consequence of climate change in the risks it takes on, and seek solutions that allow us to continue assuming such risks.
To this end, knowing the evolution of climate change hazards (particularly due to flooding and strong winds) to a proper extent and considering possible long-term insurance technical options is necessary, including adjusting premiums or coverage if the situation requires it.

Some risks that can be exacerbated as a consequence of climate change, such as heat waves and pandemics, are currently covered by the insurance sector through life insurance in its ordinary coverage package. If they were to reach a sufficiently high magnitude, the debate about including these risks within the system of extraordinary risks could be raised; for now however, that moment seems distant.

Other limitations refer to the uncertainty and lack of precise models required to perform a correct evaluation and assessment of the risks derivables from climate change that include possible scenarios that allow guaranteeing maximum coverage while maintaining the viability and stability of the model.

Climate change raises before the insurance sector important changes in three fundamental aspects: underwriting, investment strategies and the sector's own environmental policies. Of these three elements, underwriting, which is understood as the process of deciding whether a risk is insurable and under what conditions, is one of the aspects most vulnerable to the phenomenon of climate change within the realm of this insurance market.

Furthermore, the presence of asymmetries in the information between insured and insurer can lead to careless behavior on the part of the insured, generating an exaggerated perception of confidence with respect to the insurance coverage (moral risk) that can generate changes in the severity and probability of events. These behaviors are likely to be exacerbated in the face of extreme weather events.

This asymmetric information problem, associated with the difficulty of identifying high or low exposure risks through pricing, makes taking on insurance an expensive process for insurance companies in general. In the particular case of the CCS, automated coverage and the pooling of risk certainly facilitates the universality and affordability of insurance protection, but does not explicitly promote the adoption of self-protection measures by the insured party. The CCS studies measures that, beyond the dissemination and awareness-raising work performed together with the insurance sector and other institutions, have a positive impact on this type of risk reduction behavior. Also, the CCS will support any measure aimed at reducing exposure and vulnerability to risks via regulation and spatial planning.

Budget, funding and additional benefits:
The Insurance Compensation Consortium has its own equity and different from that of the State. Its income is made up of its premiums, surcharges and the product of its investments.

To face eligible coverage claims related to extraordinary risks, the CCS has, like any other insurance company, a technical provisions fund according to R.D. 2013/1997 of December 26. This fund constitutes an equalization reserve, being the key equity available for this type of risks and catastrophes.

It is effectively a financial mechanism for the accumulation of resources, which is nourished by the positive results of years with low claims in order to be able to face claims from other years in which the losses exceed the income with sufficient financial guarantee. This temporary compensation between fiscal years is required due to the potential high losses resulting from covered risks, which are characterized by their low frequency and high severity, as well as by the irregularity of their materialization. In this sense, with this mechanism the CCS is able to maintain adequate solvency margins, even as public entity, without the need to depend on the budgets of any Public Administration.

However, taking into account the peculiar characteristics of this coverage and the public nature of the CCS, the State, at its request and in order to maintain the adequate technical-financial balance for each branch of insurance and guarantee compliance with the requirements established in the Solvency II regulations (Directive 2009/138/EC of the European Parliament and of the Council of November 25, 2009), can make capital contributions as allocated in the General Budget.

In any case, the 2018 fiscal year was marked by the reduction of the premium rate to cover of extraordinary risks in order to mitigate the evolution of its equalization reserve, the purpose of which is to offset unfavorable deviations from claims. This reduction was 11% on damage to property, 40% on damage to people and 28% on financial losses.

The available equalization reserve reached € 9,596 M (€ 8,826 M in general activities and € 770 M in agricultural activities) at the end of 2018 (once fiscal year surpluses were added).

In turn, the claims ratio stood at 36.4% of the premiums for these purposes, while the evolution of these was positive at 1.7%. In this sense, and as a guideline, the capital insured by the CCS in recent years stands at:

	homes and residents' associations	3 billion €
offices	94,000 million €	
shops and other ordinary risks	454,000 million €	

industrial	1 billion €
construction works	7,000 million €
people	9 billion €

Legal aspects:
The extraordinary risks coverage of the Insurance Compensation Consortium (CCS) is affected by all those regulations and/or its own legislation that delimits and regulates it, as well as by those referring to the CCS itself and its management system.

In this sense, reference may be made to the Insurance Compensation Consortium's own Legal Charter, which regulates and constitutes it, as well as in particular R.D. 2013/1997 of December 26 on the Regulation of the Technical Provisions to be provided by the Insurance Compensation Consortium of the Ministry of Economy and Finance.

As regards the extraordinary risk level, we must highlight the following regulatory documents:

- Extraordinary Risk Insurance Regulations
- Extraordinary Risk premium rate ? coverage clause to be inserted in the ordinary insurance policies and information to be provided by the insurance entities according to Resolution of November 27, 2006 of the General Directorate of Insurance and Pension Funds (DGSFP)
- Extraordinary Risk premium rate ? coverage clause to be inserted in the ordinary insurance policies and information to be provided by the insurance entities according to Resolution of March 28, 2018 of the DGSFP
- Deductibles to be applied by the Insurance Compensation Consortium in matters related to extraordinary risk insurance

Implementation time:
The Insurance Compensation Consortium (CCS) was created in 1954 and has been in operation ever since. Given the nature of this extraordinary risk coverage, its obligatory nature and automation as a billable surcharge in any insurance policy contract, as well as its compensatory and self-sustainable nature across a broad insured base, its implementation and durability depend on the policies contracted by the insured in each case.

However, every three years the CCS Board of Directors approves a strategic plan that guides the entity's performance during that period, defining coverage, risks, compensation, fees and exclusions. The Triennial Action Plan (PAT) 2017-2019 ends in 2019, with the updating and definition process that will design the new PAT 2020-2022 taking place throughout this year.

Reference Information
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[2] https://www.adaptecca.es/sites/default/files/inundacion_calle_pvasco_13_0.jpg
[3] https://www.adaptecca.es/en/ce-opciones-de-adaptacion-implementadas/structuralphysical-services
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