



**Economics**  
& I N S U R A N C E

**MAPFRE**  
Economics

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## Introduction

In this new edition of our **Economics and Insurance** review, MAPFRE Economics has selected five articles that deal with highly topical issues, such as the evolution of the Spanish and Latin American insurance markets in 2021, global economic growth forecasts and the outlook for insurance markets, as well as an article on the health of our planet. The summary of the report The Spanish insurance market in 2021 presents an overview of the Spanish insurance sector and the performance of the main business lines, as well as a preview of how the first nine months of 2022 fared. Our article on The Latin American insurance market in 2021 gives a regional overview of the insurance sector during that period, including its main structural trends, such as penetration, density, depth of reach, an estimation of the Insurance Protection Gap and the potential for the insurance market.

Another report published recently by MAPFRE Economics is the 2022 Economic and industry outlook: fourth quarter perspectives, which in turn has given rise to two other articles included in this edition of the magazine, namely the Global economic outlook and the Industry outlook for the insurance market. The first piece assesses the state of the global economy, including a baseline and a stressed scenario of economic growth forecasts for 2022 and 2023. The second article analyzes the outlook for insurance markets and how inflation and exchange rates influence the development of same.

The last article in this issue, Toward planetary health, invites us to reflect on the influence that humans exert on our planet's natural world and the ensuing repercussions.

We hope that our readers find both the new look of the magazine and the contents selected for this issue engaging.

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## The Spanish insurance market in 2021

Author: MAPFRE Economics

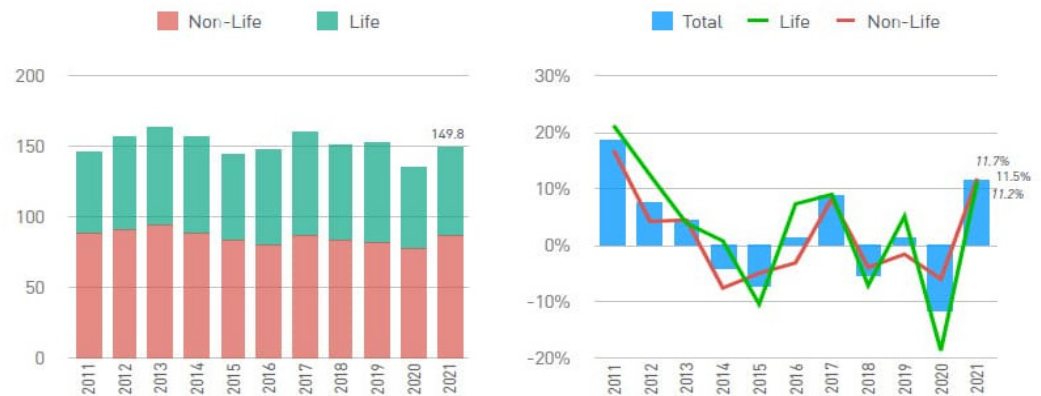
Summary of report's conclusions:  
MAPFRE Economics

**The Spanish insurance market in 2021**  
Madrid, Fundación MAPFRE, July 2022

The Spanish insurance sector is currently immersed in an economic environment that continues to be dynamic, which is reflected in the form of significant growth in its business volume. However, a marked economic slowdown is expected in the coming months and the sector is facing an average inflation rate of around 9% so far this year through September, so that the growth in premiums at the aggregate level is not sufficient to offset the high inflation. This inflationary process also continues to erode the profitability of the insurance entities and maintains high pressure on insurance prices.

The aggregate premium volume of the Spanish insurance market climbed to 61.83 billion Euros in 2021, growth of 5.0% (-8.2% in 2020) recovering the growth trend, but not reaching the levels prior to the start of the pandemic. The partial recovery of the Spanish economy and a greater sensitivity to risk as a result of the pandemic helped to develop the insurance business, especially in Health and Multirisk insurance, which were the drivers of growth of the Non-Life business, and Life Insurance, while in the latter segment the base effect was significant, as when compared to pre-pandemic premiums, it still is a long way from recovery (see Chart 1).

**Chart 1**  
 Latin America: Growth Developments in the Insurance Market  
 (premiums, billions of USD; annual nominal growth rates in USD, %)

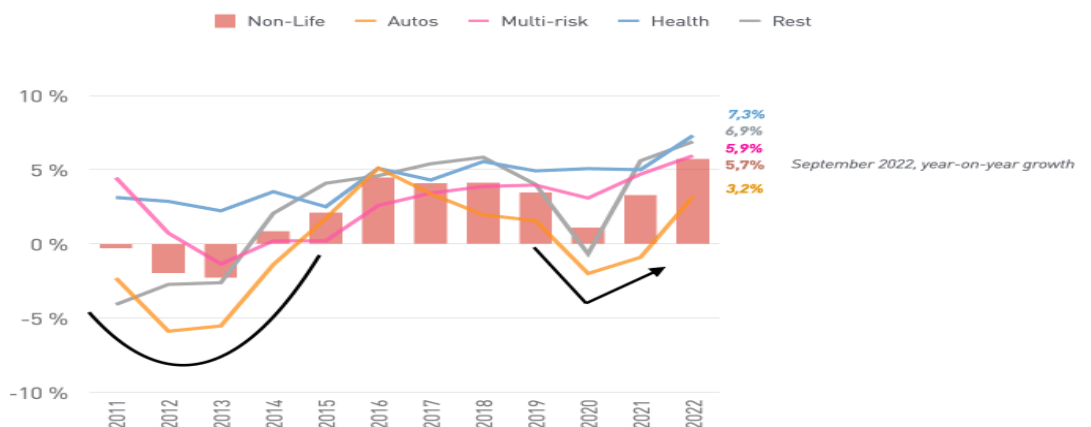


Source: MAPFRE Economics (based on data from supervisory bodies in the region)

### 2022 Progress

Analyzing the data from the first nine months of 2022, it is evident that the insurance sector continues to show positive performance, with premium growth of 5.7%, slightly below what was earned in 2019 (-1.8%). The driver for Life Insurance comes from savings insurance and in Non-Life from Multirisk insurance (5.9%) and Health (7.3%). Automobile Insurance has started on the road to recovery in 2022, with a premium volume of 8.52 billion Euros in September of that year, which is an increase of 3.2% over the same period the year before, recovering pre-pandemic levels (see Chart 2).

**Chart 2**  
 Trends in Non-Life Direct insurance  
 (annual variation, %)



Source: MAPFRE Economics (based on ICEA data)

The combined ratio of Automobile insurance increased appreciably during 2021 at 6.3 pp, to 94.1%, due to a progressive average premium reduction caused by Covid, which gave rise to a competitive environment in new production and policies aimed at retaining portfolio policyholders. Additionally, mobility was renewed, reaching almost the same level of activity as before the pandemic, with the subsequent increase in the frequency of claims (see Table 1). The trend for

2022 is influenced by the economic environment of rising inflation. This caused an increase in the cost of claims, which led to erosion of the margins as it was not accompanied by a proportional increase in premiums (3.2% in the third quarter). In the first six months of 2022, the combined ratio has continued to worsen, reaching 96.4%, a 6.3 pp increase over the ration in September 2021.

**Table 1**  
Average frequencies and costs by coverage in Automotive insurance, 2020-2021  
(frequency, %; average costs, euros)

Guarantees	Frequency (%)			Average cost (euros)		
	2020	2021	Variation (pp)	2020	2021	Change (%)
Third-Party Liability	5.9%	6.8%	0.90	1,778	1,763	-0.8%
Bodily accident	1.2%	1.4%	0.20	4,880	4,621	-5.3%
Property, plant and equipment	5.1%	5.9%	0.80	911	903	-0.9%
Damage attributable to the policyholder	19.7%	22.0%	2.20	810	818	1.0%
Broken windshields	5.2%	6.0%	0.90	327	333	1.7%
Theft	0.5%	0.5%	0.00	872	901	3.4%
Legal defense	1.1%	1.4%	0.20	280	253	-9.8%
Occupants	0.2%	0.3%	0.00	1,067	961	-10.0%
Fire	0.1%	0.1%	0.00	3,165	3,315	4.7%
Driver's license suspended	0.0%	0.0%	0.00	852	810	-5.0%

Source: MAPFRE Economics (based on ICEA data)

Health Insurance, in turn, has progressively increased its market share, to the current 25.7%, coming closer and closer to the Automobile line. In 2021, there was another increase in new production of Health Insurance, due to the population's increased sensitivity to health, and the line showed a 5.0% increase in the volume of premiums issued. It must be stated that in 2021, health costs increased significantly due to non-urgent care policyholders had delayed due to the situation during the first months of the pandemic, which caused the loss ratio, combined ratio, and technical-financial result to return to levels very similar to those before the coronavirus.

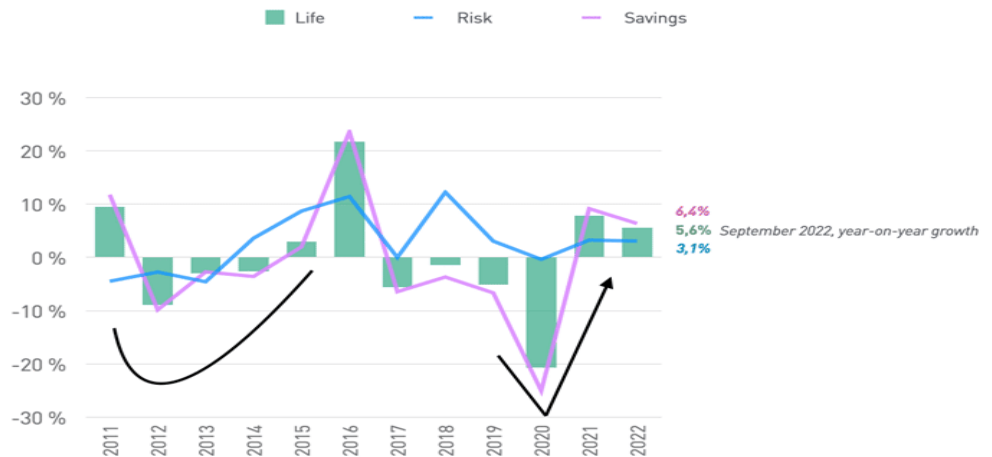
Multirisk Insurance also performed favorably in 2021, with 4.7% premium growth, notably increases in Home and Industrial, of 4.9% and 5.8, respectively. The data published on the first nine months of 2022 show a year-on-year increase of 5.9% (14.7% when compared to the same period in 2019). The growth of Industrial Multirisk continues to stand out, at 9.3% (25.2% compared to the same period of 2019).

Finally, the Life Insurance business in 2021 reached a total premium volume of 23.55 billion Euros, with a 7.9% increase. The driver was Savings/Retirement insurance, which grew 9.1%, notably Income, with 49.7%, and unit linked at 22.1%. In terms of managed savings, technical provisions recovered the growth trend lost in 2020, and showed a slight increase of 0.8% in 2021, reaching 195.72 billion Euros, with a clear push from unit linked, which grew 23.5%.

After starting the year with a -21.8% drop, the Life business had been recovering in the next months until it recorded a year-on-year increase of 5.6% in the first

nine months of 2022, with positive performance in both Life risk (+3.1%) and Life savings (6.4%), although this still represents a drop of -16.9% when compared to 2019 (see Chart 3).

**Chart 3**  
Trends in direct Life insurance  
(annual variation, %)



As regards technical profitability, the combined ratio for the Non-Life insurance segment in 2021 stood at 92.9%, an increase of 2.5 pp more than the value recorded in 2020 (90.5%), due to a worsening of the claims ratio by 2.2 pp, which stood at 69.2%. In turn, the administration expenses ratio remained unchanged at 5.3%, while the acquisition expenses ratio was 18.3%, increasing 0.3 pp (see Chart 4).

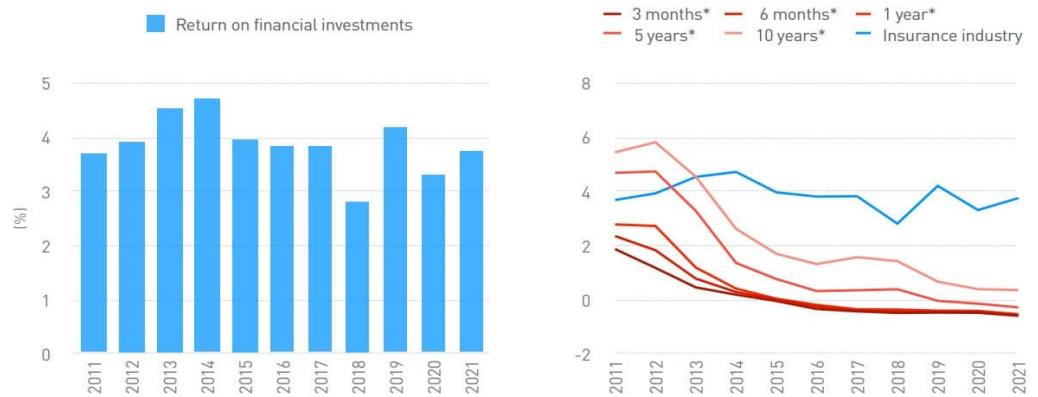
**Chart 4**  
Trends in the Non- Life combined ratio, 2011-2021  
(total combined ratio, %; annual change in combined ratio, pp)



Source: MAPFRE Economics (based on ICEA data)

On the other hand, the profitability of financial investments in the insurance sector sat at 3.75% in 2021 (0.44 pp over that observed one year before), showing certain stability in an environment of prolonged ultra-accommodative monetary policy by the European Central Bank (see Chart 5). The total volume of investments of Spanish insurance companies in 2021 reached 332.92 billion euros, representing a regression of 2.8% versus the previous year.

**Chart 5**  
Return on the insurance industry's financial investments, 2011-2021  
(financial income/ average investment, %; risk-free interest rate, %)

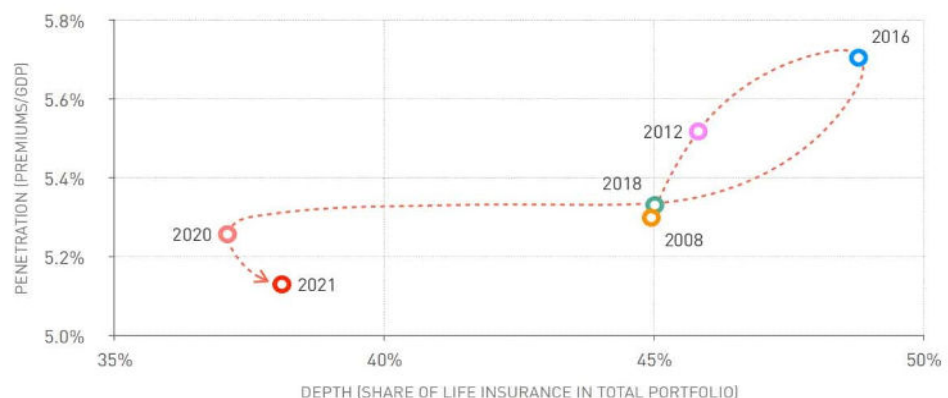


Source: MAPFRE Economics (with DGSFP data)

In view of the foregoing, the performance of insurance activity in 2021 recorded a return on equity (ROE) of 10.6%, 2.16 pp less than in 2020, and a return on assets (ROA) OF 1.42%, which shows a slight decrease of -0.2 pp versus 2020. In absolute values, the Spanish insurance sector reached 5.07 billion Euros in profits in 2021, which was a -12.5% decrease from the previous year's data.

In reference to structural trends of the market in 2021, the penetration of Spanish insurance (ratio of premiums and GDP) had a slight drop, while density (premiums per capita) and deepening (Life Insurance premiums with respect to total premiums) showed relative progress this year. Thus, in 2021 there is only a partial change in the development trend of insurance activity in Spain that had been observed since 2017, which was characterized by a retraction in both penetration and deepening. So, in 2021, while penetration decreased again, deepening grew for the first time since 2016 (see Chart 6).

**Chart 6**  
Trends in the Spanish insurance market, 2008-2021  
(penetration vs. depth)



Source: MAPFRE Economics

A detailed analysis of the different business lines and structural trends in the last decade can be found in the report [The Spanish Insurance Market 2021](#), prepared by MAPFRE Economics.



## The Latin American insurance market in 2021

Author: MAPFRE Economics

Summary of report's conclusions:  
MAPFRE Economics

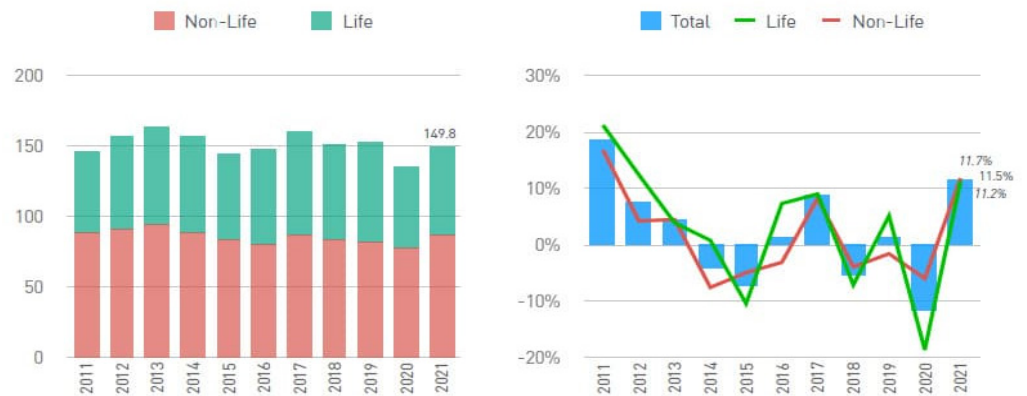
**The Latin American insurance market in 2021**  
Madrid, Fundación MAPFRE, september 2022

The economic environment in which the insurance business is currently operating is surprisingly positive in the Latin American region, where organizations such as the International Monetary Fund have revised growth estimates upwards for some of its main economies, particularly Brazil and Mexico, where the improved economic performance is reflected in their respective insurance markets, with significant growth in the first half of the year and a remarkable recovery in all lines of business, some of them beating the high inflation. However, economic growth estimates for 2023 have been revised down, pointing to a significant deceleration caused by the hardening of financing conditions and the loss of buying power of homes as a result of rising inflation. So, in the next few months the outlook for the region is complex, estimating a significant deceleration in economic growth in 2023 to place it around 1.7% (3.5% in 2022).

In 2021 (the last year for which we have a complete series of data), the insurance market in the Latin American and Caribbean region recovered after the strong downturn experienced the year before thanks to economic growth, as well as an environment of more appropriate interest rates for marketing life savings and income products, produced by the change in orientation in the monetary policy applied by the main central banks of the region, with interest rate hikes in their fight against inflation. Thus, the Latin American insurance market reached a premium volume of 149.79 billion dollars, with an 11.5% increase against -11.9% in 2020. Non-Life insurance premiums, which are 57.5% of the total market, recorded 11.7% growth (-6.1% in 2020) and Life Insurance premiums at 11.2% partially recovered from the strong contraction suffered the previous year (-18.7%) (see Chart 1).



**Chart 1**  
**Latin America: Growth Developments in the Insurance Market**  
 (premiums, billions of USD; annual nominal growth rates in USD, %)

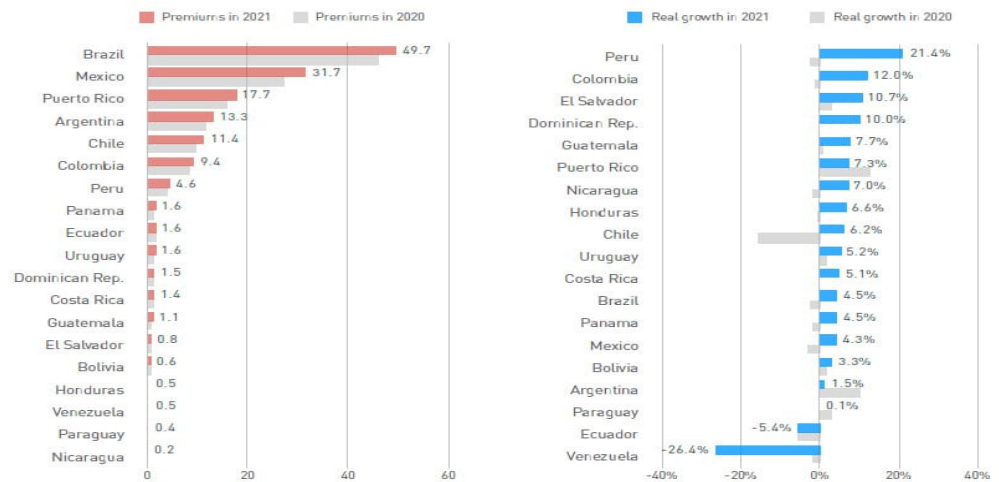


Source: MAPFRE Economics (based on data from supervisory bodies in the region)

The Life Insurance segment recovered only partially after the sharp decline the year before, which was largely explained by the behavior of two of its large markets in this business line (Brazil and, to a lesser degree, Chile), which were not able to reach the premium levels prior to the health crisis. The rest of the markets, with the exception of Venezuela, exceeded pre-pandemic levels. On the other hand, the Non-Life Insurance segment exceeded the premium level of before the pandemic, although the recovery of some specific business lines was not enough to reach the level before the crisis, as in the case of the Automobile business, which represents 15.8% of all premiums in the region, with 8.7% growth (against the -16.1% contraction of 2020). It should be noted that this insurance line had already been suffering from the economic stagnation of the Latin American economy, and has once again been offset by the Health business, with 11% premium growth in 2021 (9.2% in 2020).

After analyzing insurance activity individually in local currency for each of the markets considered in this report, it is confirmed that the growth in real terms (corrected for the effect of inflation) was practically generalized through the entire region, only recording declines in Ecuador and Venezuela. All other markets presented growth above the previous year, except Argentina and Puerto Rico, which were lower, although in the case of Argentina the switch to inflation-adjusted accounting as of the second half of 2020 makes the comparison not entirely representative (see Chart 2).

Chart 2  
Latin America: Insurance Market Premiums and Real Growth  
(billions of USD; real growth in local currency, %)



Source: MAPFRE Economics (based on data from supervisory bodies in the region)

In relation to profitability, the aggregate net result of the Latin American insurance market was 6.7388 billion dollars, a -29.2% decline from the previous year. Despite this, all countries reported positive aggregate net results, as is customary in the region, with the exception of Argentina and Ecuador, although many of them showed declines with respect to the previous year, with the exception of Chile, Costa Rica and Uruguay.

With respect to structural trends, the average penetration index (premiums/GDP) of the region was 3.0% in 2021, 0.1 percentage points (pp) lower than the previous year. This indicator deteriorated in the Non-Life Insurance segment (1.71% versus 1.77% the previous year) and, to a lesser degree, in the Life Insurance segment (1.27% versus 1.31% the previous year). Over the last decade, there has been an upward trend in insurance penetration in the region, to which the development of Life and, to a lesser extent, Non-Life insurance has mainly contributed. Although the heavy variations in regional GDP of the last two years and the good performance of Health insurance, as a result of the pandemic, have led to a narrowing of the gap over the decade as a whole with respect to Life insurance when it comes to explaining the increase in insurance penetration in the region.

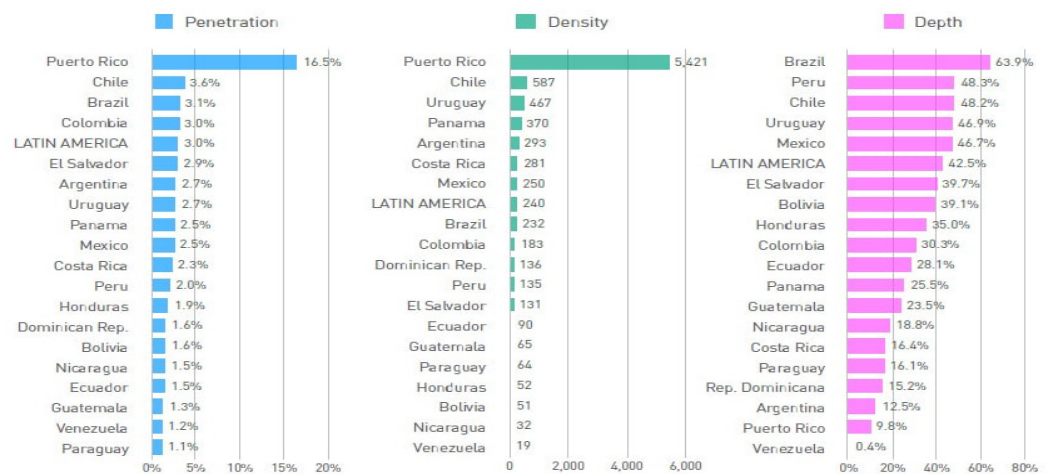
The density indicator (premiums per capita) were 240 dollars, which is a 10.7% increase over the level of the previous year. The partial recovery of insurance sector premiums in 2021, after the sharp contraction of the previous year due to the economic consequences of the pandemic and the improved behavior of dollar exchange rates, explain this improvement at the density level versus the previous year, although it remains below pre-pandemic levels, due to an insufficient recovery in the Life business. Between 2011 and 2021, density (measured in dollars) shows a downward trend in the region, dropping -6.9% in that period.

And the insurance deepening index in the region (the ratio between Life insurance premiums and total premiums) was 42.5% in 2021, -0.1 pp below the value recorded in 2020. The drop in this indicator was the result of the partial recovery of the Life segment in the large markets of the region, as opposed to Non-Life insurance, which remained over the level prior to the interruption due to the pan-

demic. All indications are that this circumstance, which particularly affected Life Insurance, will tend to correct itself. In the medium-term analysis (2011-2021) the indicator continues to show improvement over the last decade, with a cumulative increase of 2.2 pp in that period.

Chart 3 shows the comparison of the different countries in the region, based on penetration, density and deepening, indicators that measure the level of development of the respective insurance markets.

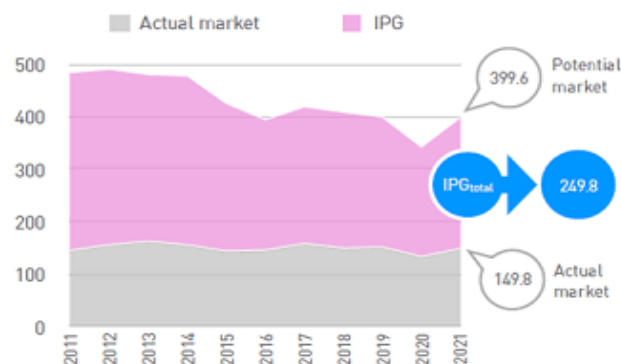
**Chart 3**  
**Latin America: Penetration, Density and Depth Indexes, 2021**  
 (premiums/GDP, %; premiums per capita, USD; Life premiums/total premiums, %)



Source: MAPFRE Economics (based on data from supervisory bodies in the region)

With regard to the Insurance Protection Gap estimate (the difference between insurance coverage that is economically necessary and beneficial to society, and the amount of that coverage effectively acquired) for the Latin American insurance market in 2021, it is 249.8 billion dollars, some 19.7% (41 billion dollars) more than the estimate the previous year. The structure of the IPG does not show significant changes with respect to our previous report, confirming the predominance of Life insurance. Likewise, the potential insurance market in Latin America in 2021 (measured as the sum of the real insurance market and the determined insurance gap) was 399.6 billion dollars (see Chart 4).

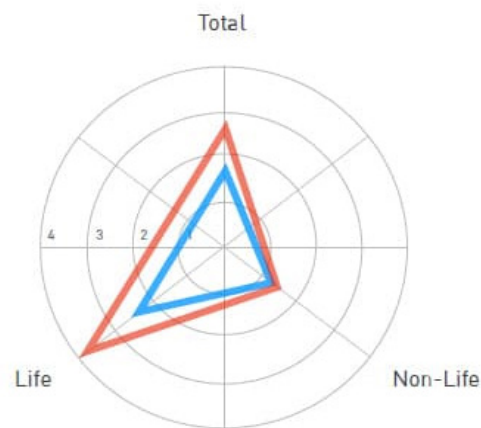
**Chart 4**  
**Latin America: Insurance Protection Gap and Potential Market**  
 (billions of USD)



Source: MAPFRE Economics

Chart 5 summarizes the evolution of the IPG as a multiple of the real market of the Life and Non-Life segments and the total Latin American insurance market in the last decade, specifically comparing the situation in 2021 versus that of 2011. Over that period of time, improvement in the total insurance gap is evident, especially driven by the reduction of the IPG in the Life segment (the segment with the least relative development in the region), while the Non-Life insurance gap as a multiple of the real market presents a certain stagnation in the reference period.

Chart 5  
Latin America: Change in IPG as a Multiple of the Actual Market



Source: MAPFRE Economics

The complete analysis of the behavior and structural trends of the insurance sector in the region can be found in the report [The Latin American Insurance Market in 2021](#), prepared by MAPFRE Economics.

## Global Economic Outlook

Author: MAPFRE Economics

Summary of report's conclusions:  
MAPFRE Economics

2022 Economic and Industry Outlook:  
Fourth Quarter Perspectives

Madrid, Fundación MAPFRE, October 2022

The events and developments being produced over the course of 2022 are deteriorating moderate growth perspectives. We are faced with a global economy that is continuing to enter a phase of exhaustion, accompanied by tighter financial conditions, in line with more entrenched and persistent inflation.

Possible changes are revealed at the global level where the trend towards a multipolar world could accelerate, underpinning the declining dynamics of globalization. Various factors are affecting these changes. First, a geopolitical reorganization with restructuring processes in progress that could be prolonged over time, due to the remaining tensions due to the conflict between Russia and Ukraine. Similarly, in Asia, political pressure is building around Taiwan, with China maintaining its reluctance to the Indo-Pacific trade alliance proposed by the United States, while tension in the region is increasing due to the escalation between the two Koreas and Japan, as well as the risk of a new Arab Spring in the Middle East. Second, a monetary policy that is beginning to show its first undesired consequences in the financial markets, such as volatility, lack of liquidity and correction of asset valuations. Third, a fiscal policy with the need to implement a new approach towards increasingly selective decisions, as fiscal space is depleted and the ability to access financing is faced without the umbrella of central banks, and which, simultaneously, must advance on a path towards medium-term sustainability. And finally, supply chains that, although showing a general relief, are still burdened by the wear and tear accumulated in certain links during the bottlenecks caused by the aftermath of Covid-19 and the conflict in Ukraine, as well as by super-specialization, giving way to less integrated and more local supply chains.

In line with previous reports, the baseline scenario maintains the view of a short and medium-term outlook of global stagflation, with limited incursions of some countries into recession, but no global worsening for the time being. Thus, the global GDP growth forecast for 2022 and 2023 would be 3.2% and 2.7%, respec-

tively. In contrast, in the stressed scenario (of an alternative and more pessimistic nature) the global economic growth forecast would be 3.0% and 2.0% for 2022 and 2023, respectively. In this case, financial variables face a two-sigma shock and volatility at levels equivalent to those observed with the Covid-19 shock. This scenario presents a situation of global recession, without sufficient fiscal space to solve it and with certain selective fiscal dominance events, where inflation, although moderated by the contraction of economic activity, becomes a structural phenomenon that survives, leading to a short-lived inflationary recession. Accordingly, the following table presents the economic growth forecasts for a set of selected economies considered in the report:

### Baseline and Stressed Scenarios: Gross Domestic Product (annual growth, %)

	Baseline Scenario (BS)						Stressed Scenario (SS)					
	2018	2019	2020	2021 <sup>(e)</sup>	2022 <sup>(f)</sup>	2023 <sup>(f)</sup>	2018	2019	2020	2021 <sup>(e)</sup>	2022 <sup>(f)</sup>	2023 <sup>(f)</sup>
United States	2.9	2.3	-2.8	5.9	1.7	0.2	2.9	2.3	-2.8	5.9	1.6	-0.5
Eurozone	1.8	1.6	-6.2	5.2	3.1	0.0	1.8	1.6	-6.2	5.2	2.9	-0.3
Germany	1.0	1.1	-4.1	2.6	1.4	-0.4	1.0	1.1	-4.1	2.6	1.2	-1.0
France	1.8	1.9	-7.9	6.8	2.6	0.6	1.8	1.9	-7.9	6.8	2.4	0.2
Italy	0.8	0.5	-9.1	6.7	3.4	-0.1	0.8	0.5	-9.1	6.7	3.2	-0.4
Spain	2.3	2.0	-11.3	5.5	4.4	1.0	2.3	2.0	-11.3	5.5	4.2	0.6
United Kingdom	1.7	1.6	-11.0	7.5	4.0	-0.4	1.7	1.6	-11.0	7.5	3.9	-0.6
Japan	0.6	-0.4	-4.6	1.7	1.6	1.6	0.6	-0.4	-4.6	1.7	1.6	1.4
Emerging markets	4.6	3.7	-2.0	6.8	3.7	3.7	4.6	3.7	-2.0	6.8	3.4	3.4
Latin America	1.2	0.1	-7.0	6.8	3.5	1.7	1.2	0.1	-7.0	6.8	3.4	0.8
Mexico	2.2	-0.2	-8.2	5.0	2.0	1.0	2.2	-0.2	-8.2	5.0	1.9	0.6
Brazil	1.7	1.2	-4.2	4.9	2.7	0.9	1.7	1.2	-4.2	4.9	2.6	0.4
Argentina	-2.6	-2.0	-9.9	10.4	3.7	0.9	-2.6	-2.0	-9.9	10.4	3.6	-0.6
Colombia	2.6	3.2	-7.0	10.7	6.7	2.0	2.6	3.2	-7.0	10.7	6.6	-0.8
Chile	4.0	0.7	-6.2	11.9	2.3	-0.5	4.0	0.7	-6.2	11.9	2.2	-0.9
Peru	4.0	2.3	-11.0	13.6	2.7	2.5	4.0	2.3	-11.0	13.6	2.6	1.7
Emerging markets, Europe <sup>1</sup>	3.4	2.5	-1.8	6.7	0.0	0.6	3.4	2.5	-1.8	6.7	-0.1	0.2
Turkey	3.0	0.8	1.9	11.4	4.8	1.8	3.0	0.8	1.9	11.4	4.7	0.8
Asia Pacific	6.6	5.9	1.6	7.7	3.4	4.9	6.6	5.9	1.6	7.7	3.3	3.8
China	6.7	6.0	2.2	8.1	3.2	5.0	6.7	6.0	2.2	8.1	3.1	3.7
Indonesia	5.2	5.0	-2.1	3.7	5.3	4.7	5.2	5.0	-2.1	3.7	5.2	4.5
Philippines	6.3	6.1	-9.5	5.7	6.4	4.9	6.3	6.1	-9.5	5.7	6.3	4.6
Global	3.6	2.9	-3.1	6.1	3.2	2.7	3.6	2.9	-3.1	6.1	3.0	2.0

Source: MAPFRE Economics

<sup>1</sup>Eastern Europe

Forecast end date: October 26, 2022.

[Click here to access the interactive version of this information](#)

The complete analysis of the global economic environment update can be found in the report **2022 Economic and Industry Outlook: Fourth Quarter Perspectives**, prepared by MAPFRE Economics.

## Industry outlook for the insurance market

Author: MAPFRE Economics

Summary of the report's conclusions:  
MAPFRE Economics  
**2022 Economic and Industry Outlook:  
Fourth Quarter Perspectives**  
Madrid, Fundación MAPFRE, October 2022

The current geopolitical and economic situation presents a complex outlook for the insurance industry. The tightening of monetary policy in the main developed economies and most of the emerging economies (except for Japan and China) is causing significant corrections in the financial markets, and its effects are beginning to be passed on more strongly to the real economy in the form of lower growth. Although labor markets continue to be strong. For the time being, restrictive monetary policies are failing to reverse the process of the loss of purchasing power, and inflation remains high, making it increasingly likely there will be an aggressive monetary policy in the coming months and a recession in the world's major economies, which will have a negative impact on insurance markets. In general, insurance markets have been experiencing growth in premium volumes. Although this is not enough to offset the upturn in inflation, which is also affecting profitability.

As for the insurance sector's balance sheet, the correction in the financial markets is negatively affecting the valuation of sovereign and corporate bonds of higher credit quality (its main investment), especially those of longer duration, and risk assets (equities and high-yield fixed income). On the positive side, the business environment continues to improve for traditional life savings and annuities with interest rate guarantees and for health insurance, as households and companies are becoming more aware of the need to hedge against inflation and complement the health coverage offered by public health systems. The automotive sector is beginning to overcome the problems of semiconductor and supply shortages that were weighing down registrations, but it is now facing a tightening of conditions in financing new vehicle purchases, which may continue to slow down the auto insurance business that is still showing no clear signs of recovery.

The forecast for the Eurozone for 2023 points to a marked economic slowdown, with real aggregate GDP growth likely to be around 0.0% (compared to the 3.1%

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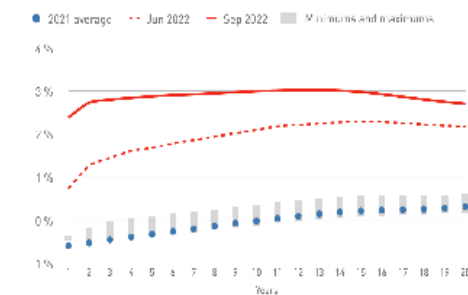


growth forecast for 2022). The uncertainty caused by the war in Ukraine and the tension in energy prices continue to have a marked effect on Europe, with inflation continuing to set record highs in the Eurozone (10.7% in October), further complicating the outlook for business in the insurance sector, whose premium growth is unable to overcome high inflation, putting pressure on insurance prices and undermining their profitability.

Additionally, the European Central Bank (ECB) continues to tighten its monetary policy with new rate hikes in July and September of 50 and 75 basis points (bps), respectively, both higher than initially expected, and a new 75 bps hike in October due to the strong rebound in inflation. These latest increases have left interest rates at 2% for the main refinancing operations and 1.5% for the deposit facility (already far from negative territory), with inflation at 10.7% in October, pointing to further rate hikes in the coming meetings. As for the quantitative easing program of bond purchases, the ECB has stopped increasing its balance sheet in this quarter (reinvesting only maturing bonds flexibly by country), without beginning a process of quantitative tightening and has stated its intention to use a tool to avoid the risk of fragmentation of the Eurozone, which maintains a controlled tension on the risk premia of sovereign bonds, especially those of southern European countries.

The risk-free interest rate curves produced by the European Insurance and Pension Authority (EIOPA) show a new and sharp rise in interest rates in all tranches, remaining at levels well above those reached at the end of June 2022, with positive rates in all maturities, a far cry from the negative interest rates shown by the curve at the end of the previous year (see Chart 1). Risk-free interest rates remain significantly below inflation, but levels are moving on an upward path, continuing to improve the outlook for insurers' traditional Life savings and annuity business. A similar situation can be seen in the United States, where interest rate hikes and the withdrawal of other monetary stimuli (particularly the reduction of the Federal Reserve's balance sheet) is more aggressive than in the Eurozone (see Chart 2).

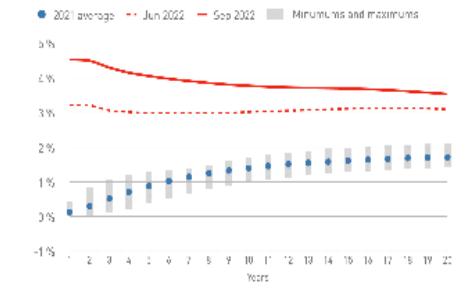
**Chart 1**  
Eurozone: risk-free yield curve (%)



Source: ECB/EIOPA (rebased on IEPZ data)

[Click here to access the interactive version of this information](#)

**Chart 2**  
United States: risk-free yield curve (%)



Source: FRED/EIOPA (rebased on IEPZ data)

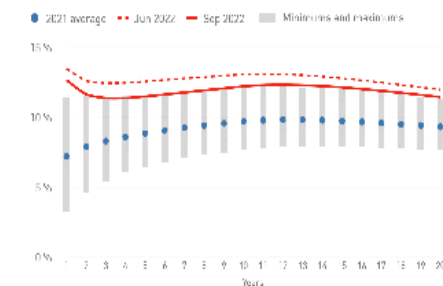
[Click here to access the interactive version of this information](#)

Furthermore, the Euro Stoxx 50 and S&P500 indices (and, in general, the major global equity markets) have experienced a sharp contraction since the beginning of the year by -22.9% and -25%, respectively, at the end of the third quarter of 2022 and a spike in volatility. This situation, together with a probable entry into recession in an environment of tightening monetary policy, complica

tes the outlook for the operations of life insurance products in which the policyholder assumes the investment risk, which have to adapt to a new environment of falling equities and fixed income that offers higher interest rates and risk premiums more in line with issue credit risk (which is increasing).

In emerging markets, particularly in Latin America, growth estimates for some of its major economies have been revised upward for this year and downward in 2023, with forecast continuing to point to a significant slowdown driven by tighter financing conditions and the loss of household purchasing power as a result of high inflation. This is the case in countries such as Brazil and Mexico, where the improved economic performance in 2022 is being reflected in their respective insurance markets, especially in the Non-Life business, with significant growth in the first half of the year, and a remarkable recovery in all lines of business, some of them beating high inflation. In addition, the high interest rate environment resulting from the tightening of monetary policy by their respective central banks, in their fight against inflation, is driving the Life savings business (see Graphs 3 and 4). However, the insurance industry’s outlook for the coming year is complicated as a result of the economic slowdown in an environment of tightened financing conditions due to high interest rates that could weigh on growth, particularly in the Non-Life insurance market.

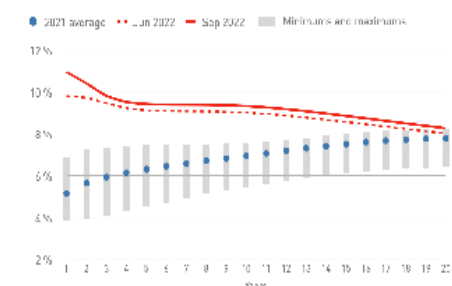
**Chart 3**  
Brazil: risk-free yield curve (%)



Source: MAPFRE Economics (Base: in 2019=100)

[Click here to access the interactive version of this information](#)

**Chart 4**  
Mexico: risk-free yield curve (%)



Source: MAPFRE Economics (Base: in 2019=100)

[Click here to access the interactive version of this information](#)

In Spain, the economic slowdown forecasts, the effects of inflation, and the tightening of financing conditions on household available income continue to present a complex outlook for the insurance sector. For the time being, the Spanish economy continues to be dynamic with the help of the recovery in tourism and a labor market that remains strong, seen in the performance of the insurance industry, which is experiencing significant growth in premium volumes (5.7% and 5.6% in Non-Life and Life business, respectively, in year-on-year terms up to September). However, this growth in the insurance business is not enough to offset the average inflation, which, so far this year up to October, is at around 8.8%. Moreover, this inflationary process continues to erode insurance companies’ profitability and keeps pressure on insurance prices high. The shortage of supplies that had been weighing down the automobile sector seems to be showing signs of improvement, and the auto insurance business is showing a slight recovery. Although the year-on-year growth up to September (1.4% for liability coverage and 5.1% for other coverage) is far from beating inflation.

With regard to Life insurance, the context for the savings-linked Life insurance and traditional annuities business continues to improve, as the ECB's monetary policy tightening materializes, raising the market interest rate curve for sovereign debt and, particularly, for Spanish sovereign bonds in all maturities and offering an increasing positive term premium at longer maturities (still at levels below inflation, so that the environment of real negative interest rates continues, albeit lower than in the previous quarter).

Full analysis of the economic and industry perspectives with additional information and interactive charts on the Eurozone, Germany, Italy, Spain, the United Kingdom, the United States, Brazil, Mexico, Argentina, Turkey, Japan, China and the Philippines can be found in the report entitled [2022 Economic and Industry Outlook: Fourth Quarter Perspectives](#), compiled by MAPFRE Economics.

## Toward planetary health

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Fundación Gaspar Casal, october 2022

The following reflection is based on the reasoned conviction that all of us, not expecting a decided response from governments that have not fully reached this point, must be more ambitious in the ecological transition we need to avoid reaching a point of no return, which would push our planet to be anything but healthy. To do this, we must change deeply rooted lifestyles. It is incompatible to meet increasingly urgent environmental demands while also maintaining old-fashioned development dynamics.

### **Pointing to environmental aspects**

The Lancet Countdown(1) gives clear clues about the progress of health and climate change. It provides an independent assessment of the effects of climate change on health, implementation of the Paris agreement, and the implications of these actions on health. It continues the work started by The Lancet 2015 Commission on Health and Climate Change(2), which concluded that climate change threatens to undermine the last 50 years of public health achievements. On the contrary, a comprehensive response to climate change could be “the greatest opportunity to improve global health of the 21st Century.”

According to the WHO(3), over the last 50 years, human activities, and in particular fossil fuel combustion, have released enough carbon dioxide and other greenhouse gases to affect the global climate. The atmospheric concentration of carbon dioxide (gas that traps more heat in the lower layers of the atmosphere) has increased more than 30% since pre-industrial revolution times. In Spain we are witnessing a progressive trend towards higher temperatures, lower annual accumulated precipitation and broader and more frequent monthly thermal anomalies. The Paris Agreement(4) marks a new era in climate cooperation, with res-

possibilities for the signers (183 countries). In the basis for the Climate Change and Energy Transition Law recently presented by Minister Rivera, Spain hopes to ensure the neutrality of greenhouse gas emissions by 2050, through an efficiency and renewable energy system by 2030 and 2050 (global and sectoral targets), providing tools that favor predictability, updating and coordination of the measures aimed at meeting the targets. All this, knowing the effects of climate change, adapting to them, guaranteeing territorial and social cohesion that permits a fair transition of the Spanish economy.

In a recent post in *Nada es Gratis*(5), Vicente Ortún points out that natural systems and health are moving in opposite directions. Our activity is causing biophysical changes at much more pronounced rates than ever before known in the history of our species. And these changes are produced in six fundamental dimensions: 1/ climate disturbance; 2/ broad contamination of the air, water, and soils; 3/ loss of biodiversity; 4/ reconfiguration of biogeochemical cycles, including those of carbon, nitrogen and phosphorous; 5/ generalized changes in land use; and 6/ scarcity of resources, including water and fertile land. Each dimension interacts with the others, altering the quality of the air we breathe, available water, and the foods we produce. These changes in living conditions affect our health and well-being, in nutritional aspects, infectious and chronic diseases, as well as migration and conflicts. Public health becomes planetary to include natural systems planning, urban development, energy production, nutrition and protection of biodiversity.

Xavier Labandeira, director of Economics for Energy, recently asked(6), how can we tackle climate change? In addition to adapting to it as well as possible, our fundamental control variable is the emission of greenhouse gases (GHG). Reducing these emissions is complex: firstly, because measures generate relevant socioeconomic costs and potentially adverse distributive effects (sectors that disappear, with the subsequent unemployment, short-term hikes in energy prices, etc.). Herein lies the first limitation in our fight against climate change. But, additionally, many policies could have a limited effect if the root of their origin is not affected: the infrastructure stock and installed capital, with associated emissions over their useful life. It goes on and on.

In addition, climate change is not directly caused by GHG emissions, but rather by their atmospheric concentrations. When the concentration level increases, our room to maneuver to control the problem is reduced. Even a world without emissions could be subject to great climate changes because, like before, the GHG stock that has been accumulating (over which we have only indirect control) plays a fundamental role. And that is without taking into account the possible natural feedback effects of exceeding certain concentration levels. In this case, we lose control of the problem.

### **Pointing to social and political aspects**

We can affirm that Climate Change (CC) has gone from being a matter exclusively analyzed on its physical basis to being a social matter, due to its causes and consequences for societies. It is a sociological fact: it is one of the most important and severe problems facing contemporary societies. It is, also, a driving force of social dynamics. It must, then, be interpreted under specific cultural and conceptual parameters. To this end, there are two possible strategies: a first rational one

that prevents “business as usual”, which perceives the negative side of CC as a limitation to growth and a reduction in survival opportunities. It is not an agent of change and does not alter society’s regulatory horizon. And a second strategy, which considers “business as usual” unacceptable, as guaranteed access to energy resources in the long term comes at the expense of fundamental human rights and the environment, with the use of violence or an undeniably unequal distribution of future opportunities. Here, CC is an actor in social change(7). In 2017, Ulrich Beck approached CC from the concept of metamorphosis: what was unthinkable yesterday, is real and possible today(8).

Some questions, perhaps a bit naïve: how much democracy can CC withstand? How much market can CC withstand? Are a market-driven economy and a determined climate policy compatible? Can democratic systems manage time limits and provide a response that meets the challenge? We see the negative trends accelerating and approaching a point of no return. CC must be prevented from becoming a social catastrophe or leading to social pathologies. Unchanging governments (USA), governments that have gone from denying to leading with a strong commitment to renewable energies (China) and the EU that sees this as an opportunity in terms of social identity and greater cohesion, are the pieces on a complicated chessboard. We must be able to go beyond an ever more emotional policy more disconnected from the source problems.

Machiavelli said that those who promote innovations are met with the opposition of those negatively affected by these changes, while the potential beneficiaries do not yet see the advantages of it all. This is very pertinent to climate change, as it affects the hard nucleus of our traditional way of understanding well-being and development. There has been a great imbalance between existential dilemmas and scientific and technological advances, with some political and institutional scenarios that maintain archaic and definitely non-functional behaviors. Priorities must be related to available resources and decisions must be made as to who will assume management of this change, combining strategy, citizen involvement, long-term and legitimacy.

Spain is a country especially vulnerable to climate change. In turn, we have the economic and technical means to contribute to global solutions, while facilitating the internal transformation to a more sustainable and higher quality production system. We must protect ourselves as a society from the great socioeconomic risks of not doing enough. To do this, it is convenient not to lose the room to maneuver, while it exists, thereby minimizing the social and economic costs of radical change that would have to occur sooner or later. Because such a demanding transition will only be possible if the costs to be paid are manageable.

### **Pointing to economic aspects**

Humberto Llavador, John Roemer and Joaquín Silvestre, economists specialized in climate change, explore alternatives to the dominant paradigm of discounted utilitarianism, understood as current inseparable from well-being and distributive justice that seeks to satisfy preferences, determining the current value of a future payment. They evaluate climate policy using sustainability criteria and require that future generations have the same level of utility as prior generations, or that the utility grows at least at a fixed rate. They sustain that the greenhouse gas emissions generated by man jeopardize a global resource: a biosphere ca-

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pable of sustaining life as we know it. They ask: What is the fair way of sharing this scarce resource among present and future generations, and in all regions of the world? They offer a new perspective based more on quality of life than just on consumption, as an ethical guide to sustainability and egalitarianism.

Sustainability, for these professors from UPF, Yale, and UC Davis, respectively, is understood as a pattern of economic activity over time that provides a set rate of growth of human well-being for an indefinite period of time. To achieve this, the atmospheric carbon concentration must be limited to a level not much greater than what exists today, approaching 450 ppm. In addition, they sustain that investments in education and research must be higher than current levels. International cooperation between developing and developed countries is also vital, because economic growth and climate change are interlinked.

The guiding principle of the agreement negotiated in Paris is that the dates by which living standards in developing countries catch up with those in developed countries should not be altered. They reach the conclusion that developed economies would have to agree not to exceed 1% annual GDP growth per capita, while developing nations should grow at a faster rate, but even lower than current projections, until they converge. Achieving such dramatic deceleration would carry political and economic challenges. The expansion of the concept of well-being beyond consumption leads us to respond to the challenge of climate change by moving away from energy-intensive goods and commodities towards less energy-intensive ones: knowledge, education and leisure(9). This immense chip change is not without its difficulties, but it seems there is no other alternative.

There is an agreed upon therapy for the fossil fuel addiction that could work: the agreed rates - price to pay for carbon dioxide emissions - \$50 per ton in 2025 to \$200 in 2050. The challenge is in building a global energy system that quadruples electrification, boosts hydrogen, eliminates hundreds of thousands of tons of greenhouse gases from the atmosphere, boosts renewables, etc. It is feasible; the technology is available, and will be cheaper if extensively adopted. It is, perhaps, the lack of political ambition that is missing. We have to think big, inside (and not just outside) the box, and embrace collaboration (we all lose if we don't work together), but competition also becomes very important.

The plans of the Spanish Government (Climate Change Law, plus the National Energy and Climate Plan and the Fair Transition Strategy) require a total investment of some €238 billion through 2030. A large part of this investment is private, specifically 80%; the rest is public, in the amount of approximately €47.5 billion. We must assume that in the next 10 years, the budget will be capable of expending, in a context of deficit control, between 4 and 5 billion annually(10).

To reach the renewable target, 3,000 MW of new renewable power plants must be installed every year until 2030, assuming that nuclear production is maintained. Is it possible to build 3,000 MW annually of new power by 2030, and extract 4 billion annually in public funds over the same term? There is no clear and convincing explanation of how to obtain the money and transform electrical production.

The EU itself has estimated that investments to be made to meet these requirements, including a 40% reduction in greenhouse gas emissions set at the 2015



Paris Summit, will be on the order of €180 billion annually between now and 2030. Energy infrastructures, public transportation improvements, building efficiency or specific R&D are some of the areas in which European institutions may not only make their own investments, but may also stimulate investment from the private sector.

### Pointing to health aspects

There is innumerable incontrovertible evidence that climate change, its anthropogenic origin, and its presence have an impact on health. The average temperature of the earth's surface will increase between 1.1 and 6.4 degrees centigrade by 2100. Models also predict an increase in sea levels between 18 and 59 cm. The data on emissions and other events, as observed in 2008, show that the biodiversity of vertebrates had decreased more than one third in just 35 years (an extinction rate 10,000 times faster than in any fossil record) due in large part to the environmental crisis. We are facing a diabolical cocktail. The vertebrate population between 1970 and 2014 has dropped 60% and the number of species at risk of extinction has not stopped growing. Protected zones of the planet barely cover 15% of the earth's surface.

The impact of climate change on human health will lead to great migrations that will harm health and lead to significant demographic changes. Future birth cohorts will be endowed with greater human capital, so the expected lower global fertility will potentially moderate ongoing climate change.

The worst climate scenarios will take place in the most disadvantaged and populated areas. Thus, population growth will interfere with the increase in desertification and the subsequent lack of food and water, the overpopulation of flood-prone coastal zones, and mass migration to large cities. It is estimated that the urban population in developing countries will go from 2.3 trillion in 2005 to 4 trillion in 2030, while the population in developed countries will remain at 1.2 trillion. The greater vulnerability in developing countries due to mass caloric restriction and the high prevalence of infectious diseases, lack of developed health systems and the lower adaptation potential, along with the lack of resources to adopt measures to mitigate the impact, indicate that the impact of climate change on health will occur, initially, primarily in Africa and Southeast Asia, and will lead to an increase in health inequality.

In relation to new scenarios of the health impact, it is estimated that by 2000, CC had led to the loss of 5.5 million DALYs (disability adjusted life years), a measure that combines premature mortality with disability, according to a panel organized In relation to new scenarios of the health impact, it is estimated that by 2000, CC had led to the loss of 5.5 million DALYs (disability adjusted life years), a measure that combines premature mortality with disability, according to a panel organized by the World Health Organization(5). For example, it calculates that CC has caused a 2.4% increase in diarrhea and 6% to 7% in malaria during the 20th Century. However, this figure attributable to CC is lower than the estimated DALYs resulting from atmospheric pollution, and much lower than the nearly 40 million lost due to interior pollution in buildings in the same period. In any case, this estimate is considered conservative because it is based on the impact on cardiorespiratory diseases due to heat waves, diarrhea, malaria, and external causes as a result of floods and increased malnutrition.

Global climate changes carry a series of health risks, such as increased mortality due to extremely high temperatures, or a changing distribution of infectious diseases. From the equator to the poles, the climate and weather have great direct and indirect repercussions on human life. Extreme weather phenomena, such as heavy rains, floods or the hurricanes that devastated New Orleans (USA) in August 2005 and all the natural disasters in practically the entire world (the latest this March in Mozambique) jeopardize health and destroy properties and means of subsistence, and cause epidemics such as cholera. In the last decade of the 20th Century, natural disasters related to weather conditions produced approximately 600,000 deaths worldwide, 95% of them in poor countries.

Intense weather changes in the short term can also have a severe impact on health, causing heat stress or extreme cold (hypothermia) and causing an increase in mortality due to cardiac and respiratory diseases. The record temperatures reached in Europe in the summer of 2003 are associated. The WHO estimated 160,000 deaths per year attributable to climate change; in Europe alone, that summer, 70,000 more deaths occurred than expected. The WHO panel made forward-looking predictions suggesting that the impact would double by 2030, mostly due to effects on malnutrition, but the climate scenarios projected in 2000 have been shown to be very conservative.

Infectious diseases will increase due to the geographical spread of vectors and elderly mortality will increase due to more frequent heat waves; the greatest impact will be caused by indirect effects due to water and food availability, and catastrophes due to extreme weather situations, as we are seeing with great frequency. The uncertainty about the magnitude of the impact on health is due to the variation in emissions and warming scenarios that are being produced.

Climate change is the primary determining factor on health in the 21st Century. Some uncertainty about some of the predictions should not, however, be an excuse for inaction. Without a drastic reduction in carbon emissions, we will be doomed to the worst omens of the climate crisis. Policies aimed at reducing greenhouse gas emissions that promote health must be established. For example, the reduction in transport with motorized vehicles would involve increased physical exercise and, therefore, notable health benefits. In addition, a reduction in ruminant meat-based protein consumption would lead to a notable reduction in greenhouse gases (20% of which come from livestock activities) and would have a notable impact on preventing cardiovascular diseases and cancer(11).

Some progress is being made just in fighting pollution in cities, which are more nitrogen oxides, but it is not enough. In Europe, according to the European Environmental Agency, every year, 800,000 people die due to atmospheric pollution, nearly double the estimate.

Specific health programs must be created to tackle extreme climate situations, such as hurricanes or heat waves. The role of citizens is fundamental in building the social capital that will lead to the establishment of global policies that will bring about a profound cultural and productive change in the face of the serious environmental crises that are looming.

It must be emphasized that the panel organized by The Lancet and the University of London advocates for creating a movement in public health that addresses the

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threats of climate change to human health in its entirety. The recommendations of this panel of experts regarding a profound change in international policy, production, economics, urban planning and social organization indicate the extraordinary challenge it represents to tackling the environmental and climate crisis(1,2).

The relationship between health and temperature is not unchangeable, but rather is regulated by a complex number of economic, social, cultural and sanitary variables. The relationship between temperature and mortality is usually "V" or "U" shaped with a minimum temperature incidence that varies from one place to another, probably depending on the adaptation of the population to the temperature range to which it is exposed. The increased morbidity and mortality related to extreme temperatures constitutes one of the direct effects of climate change. A variable of particular importance is the aging index. As the population ages, it seems that the health effects of heat waves appear at lower temperatures.

In the framework of the European PHEWE project (Assessment and Prevention of Acute Health Effects of Weather Conditions in Europe), which includes Barcelona and Valencia, the possible increase in mortality in the 2030 horizon has been studied according to different IPCC scenarios, and it is concluded that the average attributable fraction of heat-related deaths will be 2%, with a greater impact on Mediterranean cities(12), predicting that this phenomenon will increase in the future according to the expected increase in the frequency and intensity of heat waves. Higher mortality increases have been obtained in other studies(13).

The effects will be ever more important and the impact of heat waves, which will be more frequent and more intense, will be greater for two reasons: the temperature will be higher and higher as a result of climate change and the threshold for triggering mortality will be lower due to the aging of the population.

In relation to the cold, it should be stated that the relationship between cold and health is also conditioned on social, economic and cultural factors, and how they will evolve in future climate change scenarios is unknown. Cold has a greater impact on mortality in places with more temperate winters than those with harsher winters, due to the physiological adaptation to low temperatures and the infrastructure of homes, which are made in better conditions to fight the cold in places accustomed to cold waves than in those where they are less frequent(14). The increase in average winter temperatures does not necessarily imply a reduction in the frequency or severity of extreme cold episodes. It is expected that the increase in heat-related mortality will be much higher than the slight reduction that can be expected from winter deaths(15).

### **Negative and positive impacts**

It is not a matter of simplifying a complex fact by attributing the origin of extreme events to climate change, but it is a matter of highlighting and advocating that for which there is evidence: the link between these events and the constant emission of greenhouse gases. Extreme cold and heat. Chicago 40° below zero, Adelaide 46.6°. The rise of ocean temperatures increases the strength of hurricanes, droughts and wildfires. Feels-like temperatures of 50° below zero are incompatible with normal human and productive activity. Canceled flights, closed schools, empty offices, closed streets and highways, are a common scenario in recent

winters in certain areas of the USA. Other negative impacts of climate change include: water stress in more and more areas of the world, a decrease in comfortable climate habitability in cities, risks to human health due to heat waves, an increase in diseases transmitted by infectious vectors and rodents, risks to tourism, coastal flooding and rising sea levels, and an increase in migration and political and social conflicts.

We can list the following among the positive impacts: the necessary increase in international and global cooperation, greater development of a legislative and institutional architecture, the possibility of changing economic growth models, the development of renewable energies and the increasing awareness of citizens about the significance of CC. However, the most impressive phenomenon is the students for climate movement. They have become the voice of conscience of adult generations who are demonstrating their inability to manage the present without leaving a legacy of destruction to future generations. They give credit to the science many leaders overlook. They show that education is key to the construction of a critical and responsible citizenry. The future of the planet depends not only on global decisions, but also on the individuals who avoid superfluous consumption, stop using disposable containers, travel on public transportation or recycle clothing. This new awareness flourishes in schools and institutes around the world.

Tackling global warming requires transformations of titanic dimensions. Jerry Brown, the governor of California, a pioneer on the subject, describes it in terms of a conversion: "It's almost a quasi-religious transformation, that has not occurred, but should occur." Its inclusion on political party platforms is essential, since, as Vinod Thomas(16), analyst of the Asian Development Bank, affirms, the window of opportunity for action is narrowing dangerously. With all of that, political action is not enough. So, connecting and using social media intelligently to what we know so far about climate change and the events that occur could help us recognize the priority and urgency of the problem, the impact it already has on our lives, and the shared responsibility of governments, corporations and citizens as consumers and voters.

According to Jeffry D. Sachs(17), the most urgent step now is to educate governments and corporations. National governments must draft technical reports on the capacity of their countries to put an end to greenhouse gas emissions from now until the middle of the century. And corporations and banks must urgently examine the strong technological arguments for the adoption of safe and non-polluting energy and food systems.

### **In conclusion**

Unfortunately, emissions arising from the use of fossil fuels in transportation and industry are growing again. After a period of stagnation between 2014 and 2016, in 2017 they increased 1.6%, and in 2018 2.7%(5). As a result, the average temperature of the Earth's surface has increased between 0.8 and 1.2 degrees Celsius.

The latest report from the UN scientific panel insists that we have only 12 years to prevent temperature increases beyond the Paris Agreement targets, which requires a 45% reduction in current emissions. The response capacity of renewable energies today, despite doubling every four years, does not cover the increased energy demand associated with economic growth. Political conditions are not conducive to optimism: the primary emitter, China, embraces and leads the Paris Agreement, but its emissions continue to increase; the US government does not believe in climate change. Only the EU is committed. Spain as well. But there is a lot of work to be done. Sociedad entre Pandemias(18), promoted by the Gaspar Casal Foundation and published in 2021, contains a multitude of critical reflections from various disciplines that point out keys to avoid repeating the mistakes made in the most deficient related aspects discussed by the authors. Therefore, in particular, the consideration that surviving the climate crisis is not an unattainable goal is very important, but for sustainable development, we need a sustainable withdrawal.

Today, still, we are not on a good path and one thing seems clear: the health of the human species will not improve on an ailing planet.

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