

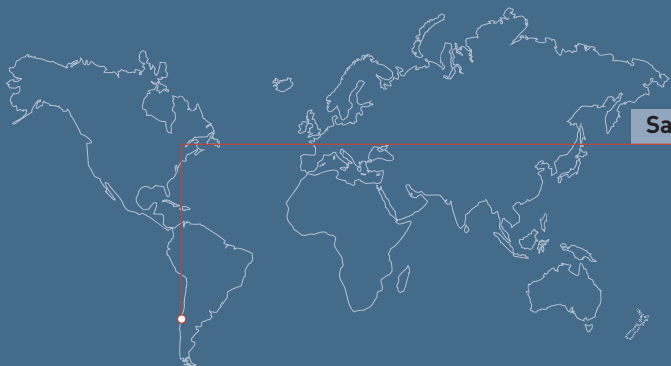
Reduction of carbon dioxide emissions in the automobile industry (Vicente Díaz, Susana Sanz).

The Chilean Forestry Sector and associated risks (Fernando Raga).

Hulusi Taskiran: The insurance market in Turkey.

Pedro Duque: There is a great accumulation of risks in the space.





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# summary

03

editorial

04

**Reduction of carbon dioxide emissions in the automobile industry.**

Vicente Díaz, Susana Sanz  
Automobile Security Institute. Carlos III  
University of Madrid

10

**The Chilean Forestry Sector and associated risks.**

Fernando Raga  
Forest Development Manager of CMPC (Paper and Cardboard Manufacturing Company),  
Director of the Forestry Institute (INFOR) and  
Second Vice-President of the Timber Corporation

20

interview:

**Hulusi Taskiran**

President of the Association of Insurance and  
Reinsurance Companies of Turkey

28

interview:

**Pedro Duque**

General Manager of Deimos Imaging and  
astronaut on reserve leave of the ESA  
(European Space Agency)

35

agenda



## editorial

In line with the intentions we set out in our previous issue, this new edition of the magazine covers a variety of subjects and points of view that substantially reflects current topics and the allied debates occurring in today's society.

Firstly, we take a look at some of the strategies developed in the automobile industry in order to minimize climate change effects. The sector's massive use of fossil fuels, its enormous financial impact and its effects on how citizens perceive their quality of life make it a sensitive subject that is key in the debate on climate change state of art. In this edition, we analyse the trends in this important industry from an academic point of view and look at the options that are now available to users.

Staying on the subject of the environment, one authority on the forestry economy quantifies the economic role of forest plantations and their by-products, accompanying his study with a traditional risk analysis faced by the timber market. A special point of interest is that the approach comes from the well advanced perspective of the Chilean forestry sector.

Turkey's present and future will have significant repercussions in the international sphere, especially in Europe, which is why we believe that an outline of the Turkish insurance market, its current problems and its future prospects, is ideal for this publication. We are fortunate to have the thoughts on the matter of the President of the Association of Insurance and Reinsurance Companies of Turkey, which we consider a privilege.

Finally, this year has seen the celebration of the 40<sup>th</sup> anniversary of man's landing on the Moon. We have commemorated the event here by interviewing the first Spanish astronaut in space, currently CEO of a successful Spanish company that has already put the first private Spanish satellite into orbit. Here, he reviews his professional career as scientist and space traveller, with very clear perception and enthusiasm. His present mission consists of studying ways in which to maintain the Earth's ecological balance, by observing the planet from space.

# Reduction of carbon dioxide emissions in the automobile industry

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Vicente Díaz, Susana Sanz  
Automobile Security Institute. Carlos III University of Madrid

A very significant interdependency exists between many climatic phenomena that can be the cause of natural disasters. Most of these phenomena cannot be avoided but what can be done is to mitigate the catastrophes to which they give rise.

This article enumerates the main measures that the automobile industry currently applies to reduce as far as possible CO<sub>2</sub> emissions into the atmosphere, thus minimising the reduction in the ozone layer.



## Introduction

The climate is mainly governed by short wave length radiation coming from the Sun, which is the only significant source of energy. This energy is partially captured by Earth's surface and partly reflected outwards by the atmospheric components or the surface.

To establish energy balance the Earth must emit the same amount of energy as it absorbs from the Sun. Thus although the atmosphere is to a large degree transparent to -it does not absorb- solar radiation, nonetheless the radiation emitted into space by the Earth's surface is long wave, which is indeed absorbed and emitted in turn by the atmospheric components.

This phenomenon, called the natural greenhouse effect, gives rise to heating of the atmosphere's lower layers, commonly known as greenhouse effect gases. These are natural components of the atmosphere. This greenhouse effect is a natural phenomenon and thanks to it life on Earth as we know it today is possible.

Scientists recognise three processes as the main causes of changes in the energy balance that is established in the climatic system:

- ▶ Changes in the energy source -the Sun-.
- ▶ Variations in the Earth's surface's response (deforestation, changes in the use of land, changes in the extension of the snow cover).
- ▶ Alternatives in the atmosphere's radiation characteristics.

Any one of these processes, by itself or jointly causes a change in the radiation balance.

The problem of detecting the changes arises because the climate's natural variability is



superimposed to it, which partially masks detection.

The Intergovernmental Panel on Climate Change (IPCC) confirms in its Assessment Report III that throughout the last century the average global temperature at the surface has increased, attributing this for the first time to human activities.

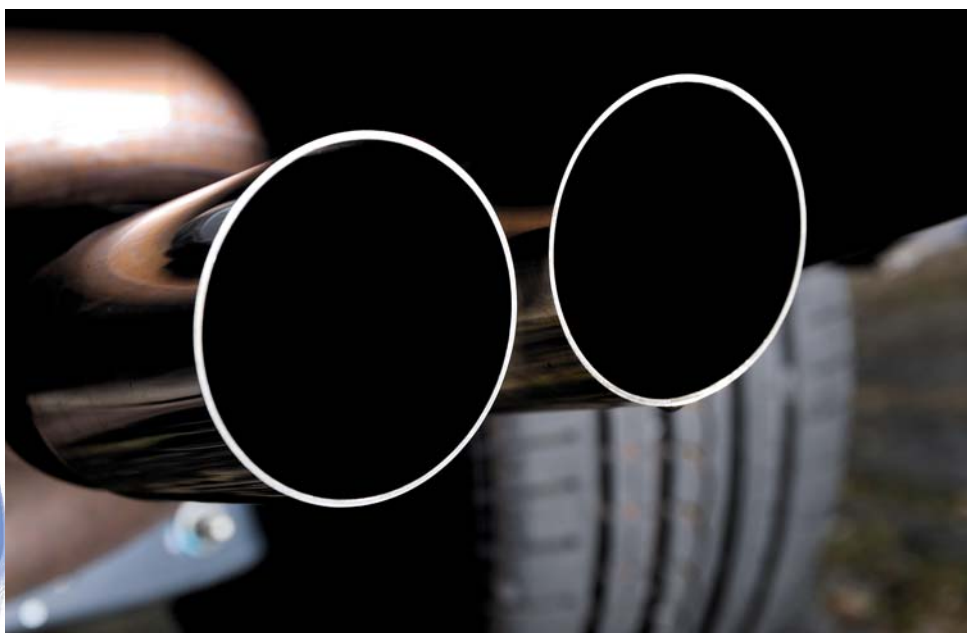
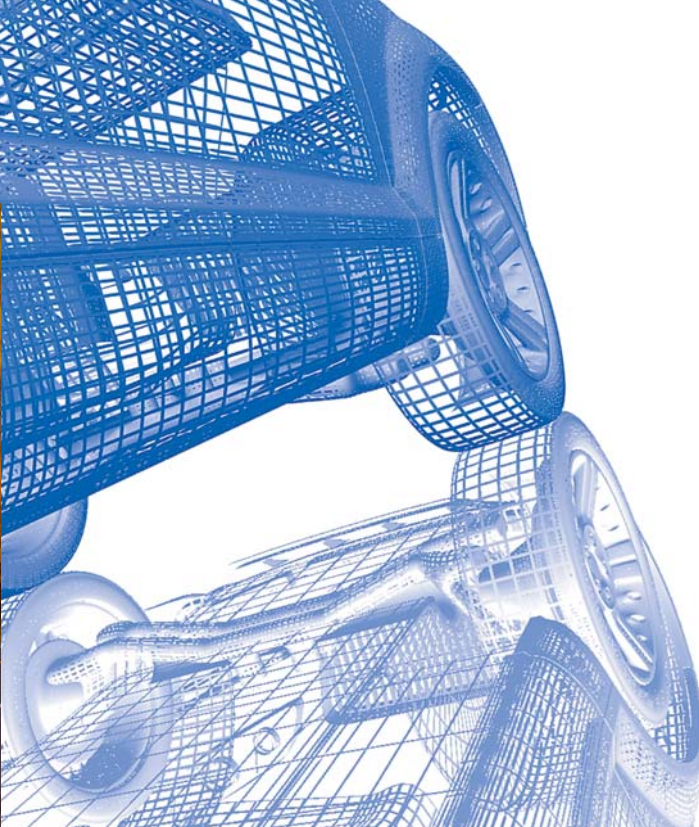
The changes in the climate derived from human activity are due to intensification of the natural greenhouse effect, when the atmospheric concentration of radioactively active gases increases and gives rise to what is known as radiative forcing.

If we focus on analysing CO<sub>2</sub>, the gas with most influence in the causes of climatic change, we find that one molecule of this gas –once emitted– remains in the atmosphere for an average term of four years before being captured by a reservoir, although the Earth overall needs more than a hundred years to adapt itself in the changes in its emissions and stabilise the atmospheric concentration again. Consequently if as of today one could achieve worldwide stabilisation of CO<sub>2</sub> emissions, their atmospheric concentration would continue to increase throughout almost two centuries.

The international response to the challenge of climate change is materialised in two judicial

instruments, the United Nations Framework Convention on Climate Change and the Kyoto Protocol, which develops and endows Convention's generic prescriptions with concrete contents. The ultimate objective of the Protocol is to achieve stabilisation of the atmospheric concentration of greenhouse





effect gases with the aim of preventing dangerous man made disturbances of the climatic system. The Kyoto Protocol -adopted in 1997- establishes for the first time, targets for reducing the net emissions of these gases for the developed countries or those with economies in a state of transition.

In the automobile industry the gas most monitored of those governed by the Kyoto Protocol is CO<sub>2</sub>. This is because internal combustion engines produce this gas.

## **Fundamental measures adopted by the automobile industry to reduce CO<sub>2</sub>**

### **Ecological driving**

In Spain the transport sector is the one with the highest consumption, totalling 42% of the final energy consumed in the country. Moreover this sector is responsible for more than 60 % of oil consumption and 30% of the total CO<sub>2</sub>. This explains the importance of adopting a cheap, ecological and safe driving style.

Over recent years the enormous progress in vehicle technology has not been accompanied by the corresponding evolution in the way of driving. Consequently as of today there is a major imbalance between both aspects.

In Spain the IDAE (Instituto para la Diversificación y el Ahorro de la Energía) (Institute for Energy Diversification and Saving) is currently implementing and promoting efficient driving techniques of private cars through two routes:

- ▶ In collaboration with the DGT (Dirección General de Tráfico) (General Directorate of Traffic) and driving schools associations.
- ▶ Training courses and programmes in collaboration with motoring clubs, hauliers associations, insurance companies and driving schools associations.

Efficient driving is a new driving style based on a series of new and simple techniques whose application (in injection vehicles) entails:

1. Fuel savings in the region of 15%.
2. Reduction of environmental contamination.
3. Reduction of acoustic contamination.
4. More comfortable travel.
5. Savings in maintenance costs.
6. Increased driving safety.

All this is achieved without increasing travelling time.



### Sustainable vehicles

The current solutions for the environment in the field of mobility are materialised in three basic technologies that meet the need to reduce emissions into the atmosphere from terrestrial transport.

#### ► Hybrid vehicles

These vehicles incorporate two engines that combine fossil fuel and electricity. These constitute one of the innovations of transition towards truly sustainable vehicles.

This is an ingenious proposal for people who want all the performance of a high range vehicle and to minimise consumption and contamination.

#### ► Electric vehicles

In electric vehicles the fuel consists of electricity stored in the form of chemical energy in batteries. They do not release emissions and

have high performance, although their autonomy is limited. For this reason their main design is aimed at urban vehicles and the majority of designs have reduced capacity.

#### ► Hydrogen vehicles

The essence of the hydrogen vehicle is the fuel pile that extracts hydrogen's electrons to convert them into electricity. Currently the fuel piles have achieved good levels of efficiency and compactness, achieving modern driving speeds.

#### ► Other technologies: compressed air vehicles

This type of vehicle, currently in a very advanced stage of development functions with an engine whose fuel is compressed air stored in tanks that it carries.

The energetic power of compressed air is in quadratic proportion to the pressure, and therefore any increase in power and autonomy



demands an aerodynamic design, minimum weight and high performance on the road.

The driving force is obtained from the expansion of compressed air fed into a closed chamber (the cylinder) that drives the pistons that create the motor's stroke.

### Alternative fuel engines

In addition to electric, hydrogen and compressed air combustion engines, others exist that allow alternative fuels such as ethanol, biodiesel or natural gas.

These cannot really be seen as non-contaminating vehicles with zero emissions, particularly those that work with biofuel made from vegetal materials, but we ought to consider them as sustainable vehicles. Some manufacturers have adapted models to allow them to work with ethanol and biodiesel. In Germany Elsbett modifies diesel engines so that they can work with any vegetal oil.

### Vehicle weight reduction

As we all know the energy required for an automobile of mass "m" to reach a speed S (km/h) is:

$$E = 0.5 * m * S^2$$

If we imagine that we do not want to dispense with travelling at a certain speed, the only way that exists of reducing energy requirement and thereby energy consumption is to make the mass "m" of the vehicle as small as possible.

Various manufacturing methodologies are applied to make vehicles' bodywork ever lighter: new types of welding and ever thinner panels for example.

Another possibility is the use of ever lighter materials (essentially fibreglass, compounds).

### Conclusions

To summarise, after a short introduction explaining why the climate is changing, this



article has enumerated the various strategies that the automobile industry currently applies to resolve the problem of excessive carbon dioxide emissions. These are all aimed at solving it in the near future.

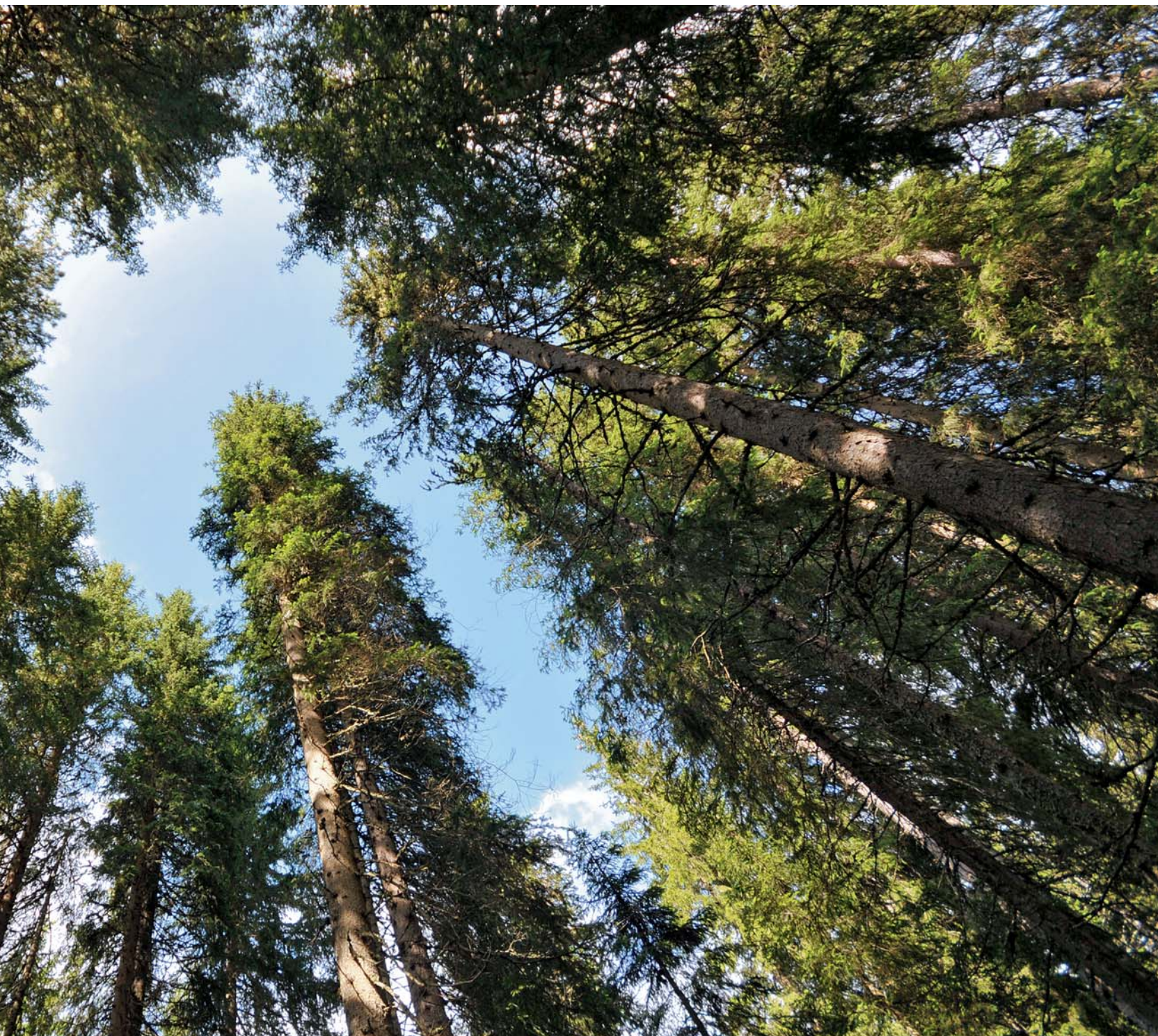
One can conclude that the automobile industry, for many years now, has been betting on ever cleaner technologies and is investing massive technological to alleviate the problem. We must not lose sight of the fact that we all form part of the automobile industry, because we are all, or at least the large majority of us, drivers, and thereby indirect CO<sub>2</sub> contributors.

# The Chilean Forestry Sector and associated risks

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Fernando Raga

Forest Development Manager of CMPC (Paper and Cardboard Manufacturing Company),  
Director of the Forestry Institute (INFOR) and Second Vice-President of the Timber Corporation



Wood is the raw material that is most consumed in the world, with a consumption rate that is triple that of cement, four times that of steel and twenty times that of plastic. It would be almost impossible to replace wood with any other material, not only because of the enormous volume consumed each day in the world, but because of the vast environmental costs involved, such as increased energy consumption and greater pollution levels, generated within the production process itself and by the way such a material would be used. Moreover any substitute would most likely come from non-renewable sources. Highly productive cultivated forests are an eco-efficient solution to the world's current and future timber needs. Chile has based its forestry sector on these types of forest; here, we take a look at the industry's main figures, its production cycle and the main associated risks.

## The World's Forests

According to the FAO (Food and Agriculture Organisation of the United Nations), there are 3.87 billion hectares of forest in the world, covering 30% of the continental surface of the planet. Of this 30%, 187 million hectares are forest plantations (less than 5%), 47% of which are destined for industrial use, whilst the remaining 53% consists of reforested land.

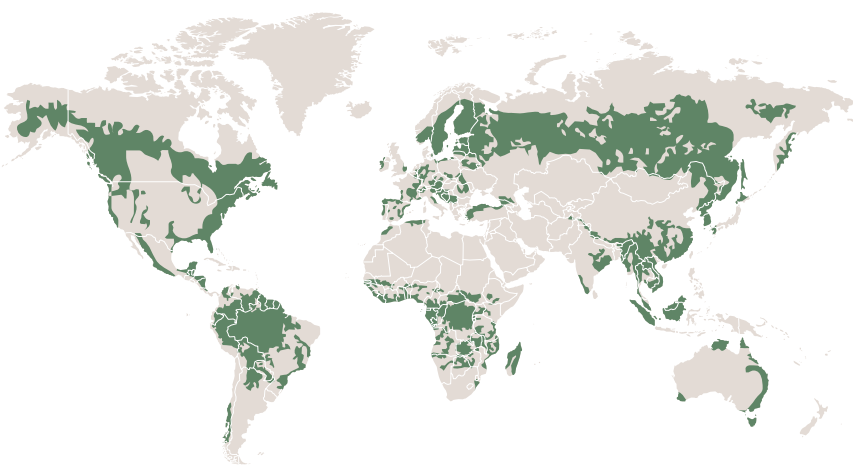
The FAO estimates that approximately 25 million hectares contain rapid growth plantations, constituting 13% of the world's total plantations and 0.6 % of its total forest area.

The countries with the largest areas of forest are Russia, Brazil, Canada, USA, China and Australia, in that order. All together are home to 57.2% of the world's forests. Chile has only 0.41% of the world's forests and 1.87% of the forests in Latin America and the Caribbean.

3,536 million m<sup>3</sup> of wood is produced in the world, most of which is used for fuel (53%) or industrial purposes.

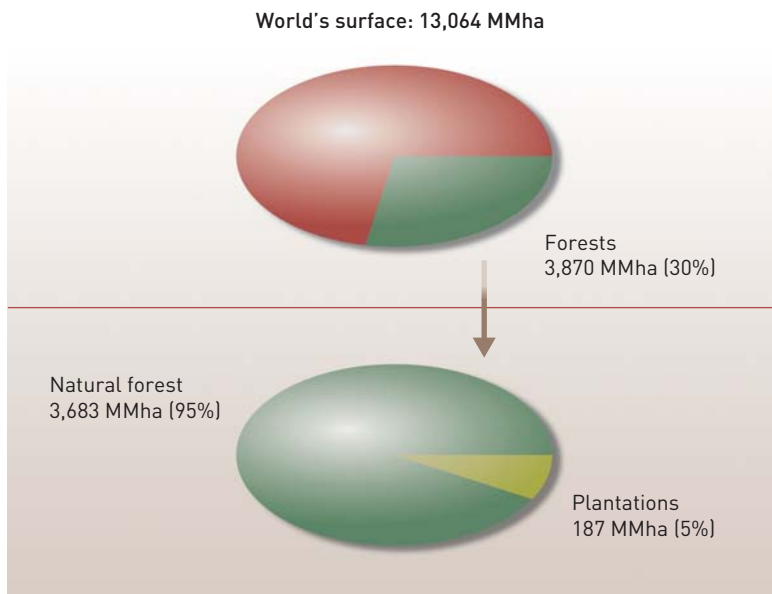
Wood used in industry can be further subdivided into pulpwood and sawn timber (depending on whether the material is more apt for cellulose or solid wood), with 31% and 60% consumed for these purposes, respectively.

## Map of the world's forests



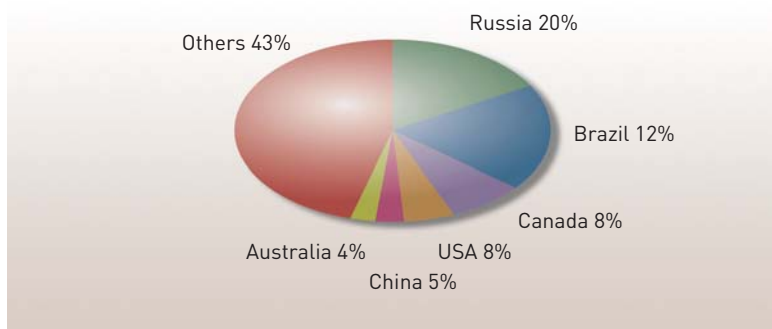
## Forest surface

Source: State of the World Forest. FAO, 2009 (data from 2005)



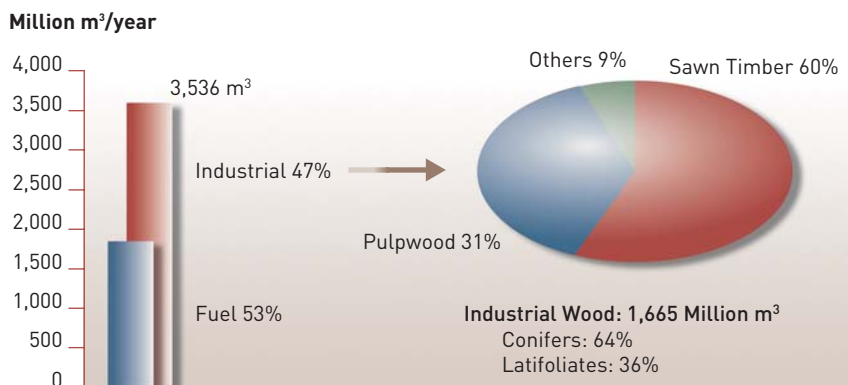
## Forest land: main countries

Source: FAO 2005



## Global wood consumption

Source: FAO 2008



In 2000, 35% of the world's industrial demand for wood was supplied from forest plantations and this figure is expected to rise to 40% by 2020.

## The Forestry Sector in Chile

Continental Chile is situated in the southern hemisphere, to the West of Argentina and to the South of Peru. It has a surface area of 76 million hectares and a population of more than 16 million. Forests currently occupy 21.5% of Chile's surface, equivalent to 16.2 million hectares.

Chile's forestry resources consist of 16 million hectares of forest, 86% of which corresponds to natural forests and 14% to plantations. The main planted species are the Radiata Pine (64% of the plantations), the Eucalyptus Globulus and the Eucalyptus Nitens. These three species cover 92% of the total planted surface. Over the last 33 years, the annual plantation rate has exceeded 100 thousand ha/year, far above the felling rate. The plantation of eucalyptus trees in Chile increased significantly during the 1990s; indeed, more eucalyptus trees are planted today than Radiata Pines.

Among Chile's competitive advantages are the cycles and yields obtained from pine and eucalyptus trees on the world market. Chile has the third highest growth rate for eucalyptus yields, after Brazil and Argentina, with cycles of 10 to 12 years and yields of 25 to 40 m<sup>3</sup>/ha/year, depending on the species. In effect, the Chilean Radiata Pine competes with the best yield rates in the region and is only surpassed by some subtropical species of Argentina and Brazil, with average yields of 23 m<sup>3</sup>/ha/year and cycles of 18 to 25 years.

Chile and Uruguay are the only countries in Latin America to experience net growth in their forest covers, thanks to high plantation rates.

Much of the country's land, which had suffered from erosion and degradation in the past due to agricultural practices, has since been reforested. As a result, some 1.76 million hectares have been recovered, equivalent to 84% of the planted land. These hectares can capture almost 40 million tonnes of CO<sub>2</sub>, helping to reduce the Earth's greenhouse gases.



## Chile in South America



2,075 thousand hectares of Chile's forests have been approved and certified according to PEFC (Programme for the Endorsement of Forest Certification) or FSC (Forest Stewardship Council) sustainable forest management standards. These hectares correspond to approximately 75% of the country's plantations.

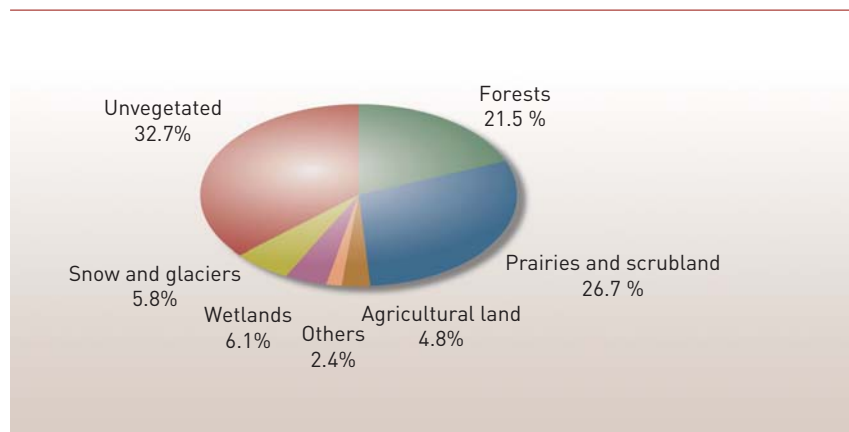
The country has 13.4 million ha of native forest (equivalent to the combined surface area of South Korea and Taiwan). 19% of national territory and 29% of the forests is under the protection of the Chilean State, through National Parks, National Reservations and Natural Monuments; indeed, Chile is one of the countries with the highest percentage of protected forest in the world. Neither should we forget that there are 2 million hectares of protected forest in private properties, equalling 14.6% of the country's total protected forest.

In 2007, the annual timber harvest reached 52 million m<sup>3</sup>, of which 38 million m<sup>3</sup> was used for industrial purposes and 14 million m<sup>3</sup> for energy. Of the wood used in industry, 98% comes from plantations, whereas 44% of that used for energy still comes from natural forests; the rest is from plantations and waste from primary and secondary industry.

40% of all industrial wood is used in sawmills, with a similar percentage used for pulpwood and paper. The rest is used to make boards,

### Chile: land use distribution

Source: INFOR, Chilean Forestry Sector 2008

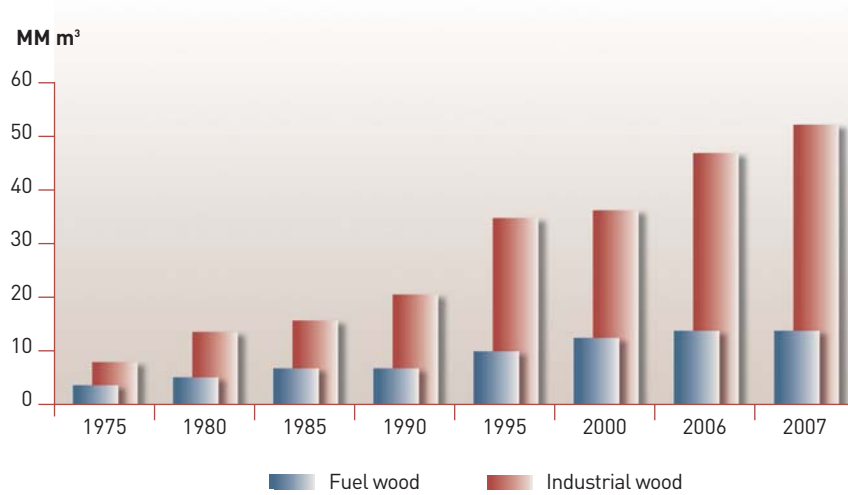


## Proportion of protected forests



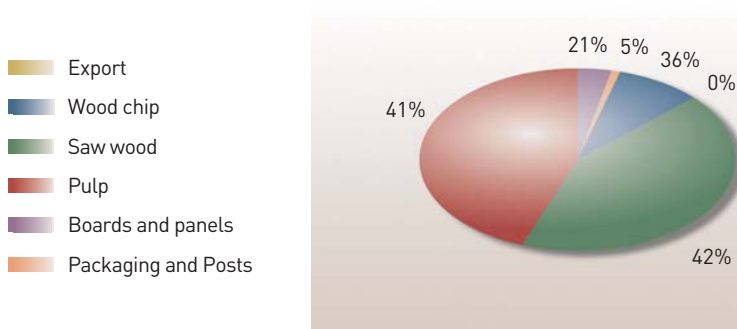
## Annual Timber Felling

Source: Infor 2008



## Chile: Main industrial uses of wood

Source: Infor 2008



panels and other products. Many of these products are exported.

Forestry exports have risen continuously over the last few years, resulting in a positive trade balance. Exports in 2008 totalled USD 5,454 Million, representing a growth of approximately 16% over the last 6 years. Over this period, the export market has diversified, with the wood produced in Chile now reaching up to 115 countries.

The forestry sector is Chile's second largest exporting industry, behind only large-scale mining. It generates direct and indirect employment for approximately 400 thousand people and represents approximately 7.3% of GDP. The industry's products are exported to more than 115 countries, with China and the US being Chile's main export markets, followed by Japan and Mexico, although the US market shrunk over the last year due to the international financial crisis.

The main export products are white pine timber and eucalyptus pulp, followed by sawn timber.

The Chilean forestry sector is very concentrated, with two large companies dominating the market: Arauco and CMPC. Together, these companies account for nearly 72% of the export market



and control 70% of the pine plantations and 40% of the eucalyptus plantations. The third largest company is Masisa, Latin America's leading wood board producer.

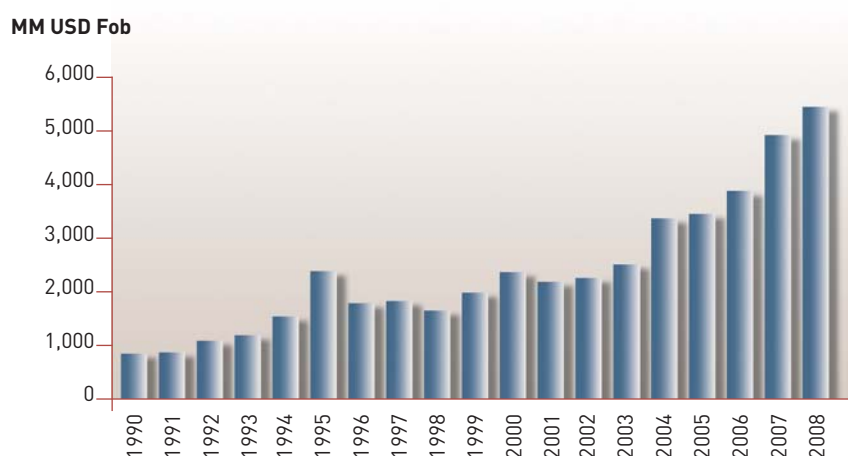
### The effects of the financial crisis

The international financial crisis has affected the subsectors of Chile's forestry industry to varying degrees. In early 2008, the effects were already being felt as demand from the US, Chile's main solid wood export market, dropped. In May 2008, house starts dropped by 45.2% from May 2009 levels and by almost 80% from 2006 levels. Initially, only wood producing companies exporting to this market were affected; however, after the Lehman Brothers' collapse, the contraction in demand spread to other markets, such as Europe, Asia and the Middle East, affecting, in turn, the demand for sawn timber. In 2008, 148 sawmills (mainly small and medium sized) were forced to close their businesses in Chile. In the last quarter of 2008, it was the cellulose industry's turn, when international demand for Chile's products practically seized up for more than four months, only to return weakened, with prices at which no plant in the Northern Hemisphere could have continued producing. However, the effects on industries such

as paper and sanitary products were much less severe. In 2009, the largest companies were forced to reduce production in their sawmills and forest harvests, along with the rate of cellulose production. The decline in the sawmill sector now appears to have bottomed out and some improvements are expected for the 4<sup>th</sup> quarter of 2009. The volume of cellulose sales has increased thanks to greater

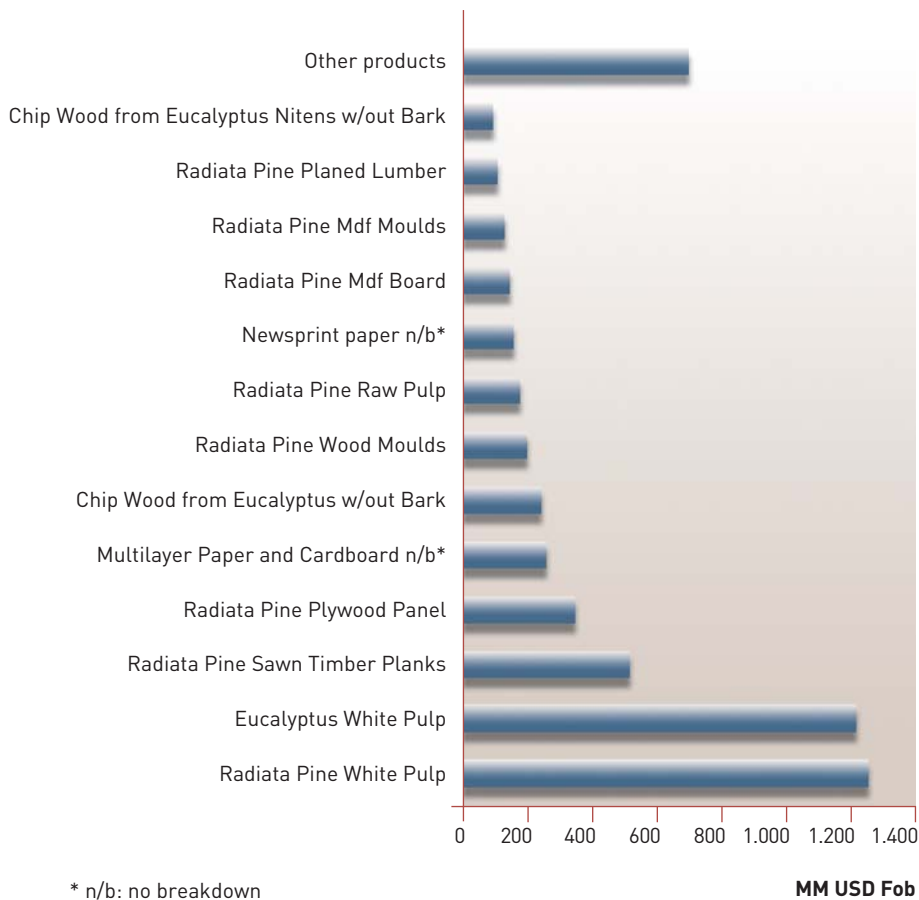
### Chilean forestry exports

Source: Chilean Forestry Statistics, Central Bank  
Source: Infor 2008



## Structure of forestry exports

Source: Infor 2009



demand from China, albeit at lower prices, with intermittent rises. It is hoped that the different subsectors of the industry will see improvements, as demand picks up and the process of recovery consolidates over the coming year.

## Risks associated to the forestry business

The economic cycle in forest plantations comprises four main stages:

- a. Silviculture:** Silviculture covers plant production, management of forests (fertilisation, thinning out, pruning) and maintenance and care of trees until they are ready to be harvested. This is the longest stage of the forestry

## Economic cycle of forest plantations







cycle, lasting between 10 and 25 years, depending on the species. The hazards to which forests are exposed during this stage consist of weather risks (windstorms, floods, snowstorms), biological risks (plagues), man-made risks (territorial occupation, theft of wood) and fire risks. The last factor is the most critical for the business and shall be discussed in further detail below.

**b. Forestry production:** Forestry production covers the harvesting of forests and transportation of logs to development plants. The main hazards during this stage of the cycle are risks affecting the health and safety of the employees carrying out the work, the risk of faults and failures in the equipment used and risks related to safety/security during transportation.

**c. Wood engineering:** This is the stage in which products such as sawn and remanufactured timber, fibre and plywood panels, cellulose and paper are industrialised. The principal hazards during this stage of the process are those normally associated to industries: fires and earthquakes (Chile is prone to high seismicity), faults and failures in the equipment, loss of profit and health and safety. Generally, these risks are no different from those found in any other industry.

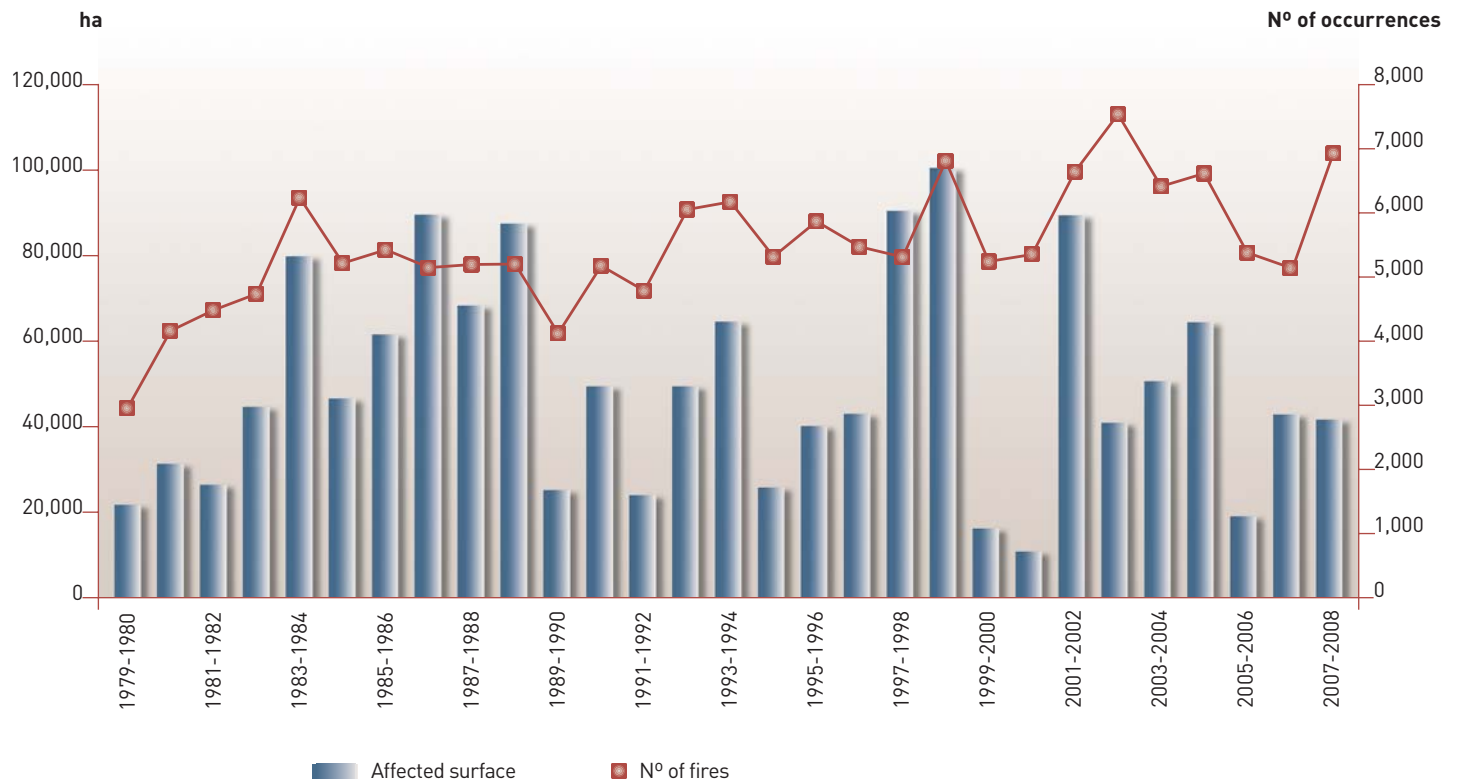
**d. Commercialisation:** This stage comprises the consignment of products to the internal market's points of sale or to the ports for exportation. Considering that the bulk of national production is exported, the main risks in this stage are those normally associated to ocean freight shipments and are

▶ development ▶

▶ commercialisation ▶



## Annual Forest Fire Statistics



similar to those of any other large-volume non-perishable goods export process.

### Forest fires

Rainfall levels in Chile's forests fluctuate significantly throughout the year, although the strongest rainstorms occur in autumn and winter, whilst the summers are generally dry. Consequently, the forest fire hazard season is usually from November through to April of the following year, when fires can start and spread easily due to the spring and summer weather conditions. The most critical months are generally January and February. However, meteorological phenomena in the area, such as El Niño and La Niña, can make the season more severe or make it last longer.

Although there are approximately 5,200 fires each year affecting 52,000 hectares on average, the incidence and damage caused during each season fluctuate enormously.

The natural vegetation on prairies and in the scrublands usually sustains the most severe damage, followed by woodlands and forests. Commercial plantations, mainly Radiata Pine plantations, also suffer some damage, albeit to a lesser extent: an average of 7,000 hectares is affected each season. This number is high, but this 0.3 percentage of incidence poses no structural threat to the existing mass of 2.2 million hectares.

The estimated financial loss is approximately USD 50 Million per fire hazard season. However, apart from the loss of vegetation caused directly by the fires, there are other indirect effects and consequential losses resulting from the loss of vegetative cover, such as flash floods, landslides and desertification. There are also added social costs, such as the destruction of homes and, more importantly, the deaths of inhabitants and firefighters.

Most of the forest fires in Chile are caused by human activities, sometimes through negligence, sometimes by accident and sometimes



intentional. Fires caused by lightning have also become more frequent over the last few years. Thanks to campaigns designed to raise awareness of the potential danger and damage of forest fires and to greater controls and general oversight, the use of fire in forest environments has declined over the last few years. However, the problem persists, especially with small landowners who continue to use fire carelessly.

88% of all the forest fires affect an area of less than 5 hectares. A few of these fires can spread to large proportions. However 0.6% of forest fires in Chile, representing approximately 40 fires over an area of more than 200 ha per season, can spread to cover more than 2,000, 6,000, 10,000 or more hectares each, concentrating fire-fighting resources, causing social alarm and damage and burning approximately 67% of the areas affected by forest fires in Chile.

Through the National Forest Corporation (CONAF), the Government of Chile implements preventive policies and deploys fire-fighting units, mainly in areas belonging to small and

medium-sized landowners, in parks and national reserves and in lands owned by the state. The Government also regulates how fires may be used in rural environments. Approximately USD 7.5 Million are invested in this work every season.

At the same time, forestry companies invest some USD 20 Million each year in preventive work and fire fighting operations in their forests, as well as in those in adjacent lands belonging to other landowners.

FAO  
<http://www.fao.org/forestry/home/es/>

PEFC  
<http://www.pefc.org/internet/html/>

FSC  
<http://www.fsc.org/>

INFOR  
<http://www.infor.cl/index.htm>

**In Chile an average of 7,000 ha of plantations suffer fires each year (0.3%), but this amount poses no structural threat to the existing mass of 2.2 Million Hectares.**



## interview to **Hulusi Taskiran**

Chairman of the Association of Insurance and Reinsurance Companies of Turkey



Born in 1957 in Istanbul (Turkey). Achieved BA degree at the faculty of Business Administration at Bosphorus University in 1980 and joined the insurance industry at the beginning of 1981.

He worked for the insurance company Sark Sigorta (now Allianz) between 1981-1988. In late 1988 he left the company as the manager of marine department and joined T. Genel Sigorta as the assistant general manager in charge of marketing and technical affairs. He became the general manager of the company in May 1993.

At the same time, he had been the founding general manager of Genel Yasam Sigorta between 1998-2003. In 2001 he became the CEO of both companies until 31.12.2008, when he retired. He is Vice Chairman of the Board of MAPFRE Genel Sigorta and MAPFRE Genel Yasam Sigorta.

He was elected the chairman of "the Association of Insurance and Reinsurance Companies of Turkey" in 2005 after 6 years as a board member. He has been re-elected twice since then.

He is also the chairman of the Insurance Guarantee Fund and chairman of the mutual Agricultural Company called Tarsim A.S which is in charge of all operations on behalf of the industry and State agricultural pool.

Mr. Taskiran has been married since 1985 and has a son of 16.



## *“Harmonisation with EU directives has been strictly followed”*

Turkey is a fascinating country as is its insurance market which combines the European traditional approach with the Asian potential to grow. What is your vision of the strategy and targets of insurance companies in Turkey?

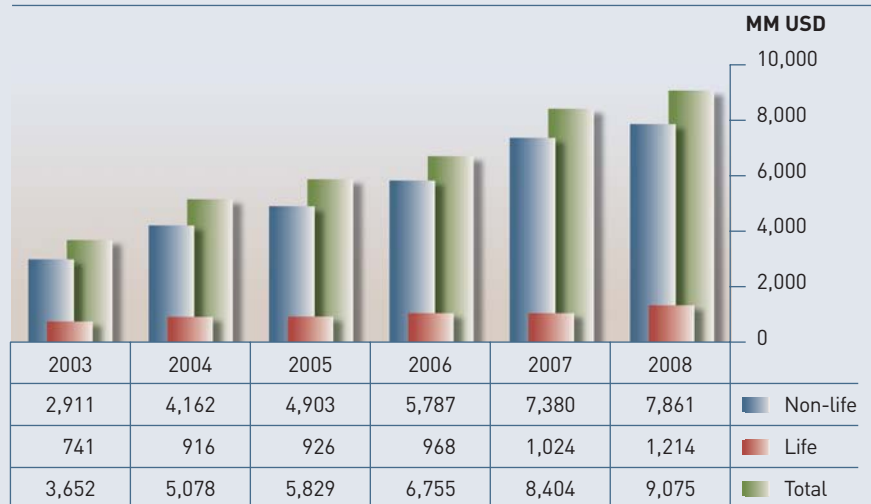
One of the main concerns of insurance companies in Turkey is to increase public awareness of the importance of insurance as there is great growth potential in this young and dynamic country. With this in mind, the Association of Insurance and Reinsurance Companies of Turkey has launched a new advertising campaign to draw people’s attention to the importance of insurance in their daily lives.

Another key target of insurance companies is to increase their financial strength to meet international standards by enhancing their value and implementing a customer-focused approach to services.

As at May 2009, there are 61 insurance and reinsurance companies in Turkey, 59 of them being insurance companies (23 life and 36 non-life) and the remaining 2 being reinsurance companies. Of these, 54 insurance companies and 1 reinsurance company are active. The number of people employed in insurance companies is 16,019. There are 13,579 agents and 70 brokers active in the market.

Between 2003 and 2006, Turkey’s premium income as a percentage of its GDP (figure 2) gradually increased from 1.43 % to 1.68 %. The drop registered in 2007 is due to the fact that the method for calculating Turkey’s national income was changed. In fact, Turkey’s national income in 2007 increased substantially compared to

**Premium Income (2003-2008) in USD**

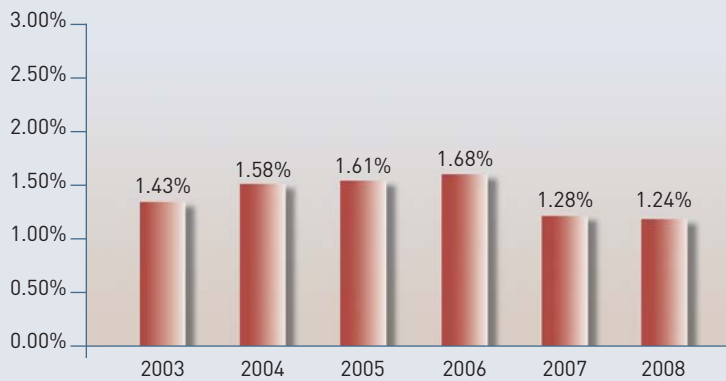


2006. In 2008, Turkey’s premium income as a percentage of GDP was recorded as 1.24 %, compared to 1.28 % in 2007. This drop can be ascribed to the impact of the global financial crisis on the Turkish insurance market.

**Could you briefly explain the history of the Association of Insurance and Reinsurance Companies to us, from your privileged position as President? What is its role? What were the milestones of the Association and what are its current prospects?**

The history of insurance in Turkey dates back to the 1870’s. At that time, insurance transactions and services were mainly carried out by foreign insurance companies. In 1900, insurance companies operating in Turkey decided to join under

## Premium Income vs GDP (2003-2008)



the umbrella of a “professional organisation” and established the “Insurers’ Syndicate of Turkey”, which had 81 members, all of them foreign companies.

After the proclamation of the Republic in Turkey in 1923, this Society was abolished and “The Club of Insurers” was established in 1924, which then took the name “Central Office of Insurers”. In 1952, some of the members of the Office established “The Association of Insurance Companies of Turkey”. On the same date, the Central Office of Insurers adopted the name “Office of Insurers of Turkey”. In 1954, both organisations merged under the name “Association of Insurance and Reinsurance Companies of Turkey”. It was not until 1975 that the Association adopted the name it uses today; “The Association of Insurance and Reinsurance Companies of Turkey”.

The Association of Insurance and Reinsurance Companies of Turkey is a specialised institution with the characteristics of a unique non-governmental institution established by law. Within the context of the Insurance Supervision Law, the Association is a legal entity established for the development of the insurance profession, the implementation of the principle of solidarity among insurance companies, the elimination of unfair competition among members and the preparation and implementation of any official duty transferred to it by the Regulatory Body. Membership is compulsory by law; therefore all insurance and reinsurance companies operating in Turkey are members of the Association.

**What are the main events where Turkish insurance companies meet? What about regional**



**conferences where the neighbouring players exchange ideas? Does Turkey play a leading role in discussions as an advanced competitor?**

The Association organises national and international conferences every year. These conferences bring together the managers and staff of insurance companies, government officials, academics and all other stakeholders in the sector. In this context, we have organised international conferences in cooperation with the OECD and the World Bank. We hosted the CEA (European Insurance and Reinsurance Federation) General Assembly in 2006 and we will be hosting the IMIA (International Association of Engineering Insurers) General Assembly this year in September.

Regarding our efforts in neighbouring markets, we held the “Eurasian Insurers Conference” in Istanbul in December 2004, with the participation of insurers from Azerbaijan, Georgia, Kyrgyzstan, Uzbekistan, Kazakhstan and Moldova. This Conference provided a platform for Eurasian insurers



Bridge over the River Bosphorus

to come together and discuss various issues. As an advanced competitor, Turkey provides Eurasian countries with the necessary information, expertise and know-how whenever required. The Association also regularly attends meetings of the CEA, OECD, IMIA and IUMI (International Union of Marine Insurance) and follows developments in insurance at European and global levels. These are then shared with member companies through comprehensive reports and working papers prepared by the Association.

**Insurance Law 5684 was approved recently, on June 14<sup>th</sup> 2007. What has it meant from the regulatory point of view in respect of the financial strength of insurance companies?**

In accordance with the new Law, harmonisation with EU directives has been strictly followed in fiscal and financial matters. The recent alteration of the minimum financial requirements to match not only premiums and claims but also risk basis calculations, has helped to achieve a triple in-

crease compared with traditional methods. As a result, the transparency of companies' financials has reached a higher standard with the introduction of the new reserve requirements. A committee has been established in the Treasury Department, with a view to following developments at EU level and accomplishing harmonisation studies regarding EU Solvency II requirements.

All these regulations have empowered the regulatory authority whose main mission is to protect the insured and maintain the healthy operation of the insurance market.

**What are the main difficulties that companies will have to face in order to fully comply with the Insurance Law? How does it rule in respect of insured and agents?**

The major inconvenience that companies will face in order to fully comply with the Insurance Law is related to the companies' financial structures. The changes in the calculation of

**As an advanced player, Turkey provides Eurasian countries with the necessary information, expertise and know-how whenever required.**



Natalia Region, Turkey



**Turkish authorities, when establishing the TARSIM Model, were inspired by the Spanish model for agricultural insurance.**

companies' capital requirements (solvency) and the establishment of new technical reserves are related to this issue. Also, the enhanced reporting requirements will need supplementary work.

One of the most important new features of the Insurance Law is the Insurance Arbitration Mechanism that consists of independent and impartial arbitrators, operating under the umbrella of the Association. The aim of the Arbitration Mechanism is to bring rapid and reasonable solutions to the problems of consumers as well as insurance establishments.

The "Regulation on Information Regarding Insurance Policies" also supports this system by enhancing consumer protection. When entering into contractual relations and during the term of a policy, the insured is provided with information regarding the subject matter of the policy, cover and other conditions, as well as any changes or developments that might affect them.

With regard to agents, those who want to be engaged in insurance agency work must be registered in the Register maintained by the

Union of Chambers and Commodity Exchanges of Turkey.

**When dealing with technical aspects of insurance, what has the Law established on enabled branches, the role of actuaries within the companies and earthquake claims reserves?**

Branches have been reorganised in line with EU directives. In this context, the Insurance Uniform Accounting System has been modified accordingly.

With regard to actuaries, the Law compels companies to work with a sufficient number of actuaries. The Treasury Department is held responsible for keeping a Register of Actuaries. Those who want to work as actuaries must be registered. Principles and procedures relating to the acquisition of "actuarial status" as well as the duties and powers of actuaries are determined by regulation.

With the new Law, the role of actuaries in companies has been enhanced. Many foreign companies have entered into the Turkish market





The Bazaar, Istanbul

and competition in the insurance sector has increased remarkably. This competitive environment provides the ground for actuaries to have a supportive role in the determination of tariffs in non-life branches as well. On the other hand, Actuaries also have an important role to play in the calculation of technical reserves, such as IBNR.

Regarding earthquake claims reserves, the new Law introduces the "equalisation reserve", a reserve which is allocated for insurance branches determined by the Department to balance claims rate fluctuations in future fiscal periods and to meet catastrophic risks.

**There is almost no country in the world whose insurance market is not adapting its strategies to the current financial crisis. Could you identify problems and opportunities in the Turkish Insurance market?**

The problems we face because of the global financial crisis are not as significant as those suffered by the global insurance players. The

investments of Turkish insurance companies have not been affected at all as these are entirely local, mainly in government bonds or bank savings. So we do not have any problem as far as the quantity and quality of the assets is concerned. The most important effect of the changing environment on financials will be a reduced amount of earnings on investments due to the sharp decrease in interest rates.

As a result of the financial crisis, the regulatory authority has taken additional measures. If insurance companies make cessions to reinsurers below a certain rating level, this will result in an increase in their capital requirements.

The main problem we face is decreasing insurance demand due to the shrinking economy. The Turkish economy is expected to have negative growth of 4 to 6% in 2009 and we are afraid that the insurance market will face a worse scenario in this respect. The reduction in insurance demand is causing strong price competition in the market which is the main problem for the market. Therefore gross premiums seem to fall not only because of shrinking demand but also rate reductions. I am personally pessimistic about this year both in terms of growth and results.

**Talking about foreign investments in the insurance market, what could be the advantages and disadvantages of the arrival of foreign shareholders?**

There has been a substantial increase in foreign entries into the Turkish market. Many international groups are now active. As at the end of September 2008, foreign owned insurance companies had a share of 53.91% of the total capital and a share of 75.22% of total premium income. The interest of foreign groups is a clear indicator of the growth potential of the Turkish market, which is young and developing.

Know-how transfer and new employment opportunities are important advantages of foreign investment. However, if there is no insurance awareness in society, increasing overall premium income is impossible. Therefore new entries into the market should be supported by new insurance awareness campaigns and advertisements. Otherwise, companies will continue to have intense competition over a relatively small and limited portfolio. Competition which has always been fierce has become even more aggressive with the entry of foreign investment into the market. In 2006 and 2007, foreign inves-

**I believe the size of the Turkish market is a great opportunity for any foreign player wishing to use their presence in Turkey as a bridge to the Turkic markets.**

The Blue Mosque, Istanbul



tors paid around USD. 100 million for 1% market share excluding excess capital and they seem to be prepared to pay more to increase their market share.

**Another interesting solution was created more recently for systemic risks, the TARSIM pool. Do you think it will become as robust as the US and Spanish models for agricultural insurance?**

TARSIM (Agricultural Insurance Pool) provides insurance coverage for catastrophic risks that threaten the Turkish agricultural industry and which cannot be carried by a single insurance company. Turkish authorities, when establishing the TARSIM Model, were inspired by the Spanish model for agricultural insurance. There are no major differences between the systems in Spain and Turkey. The system in Spain enshrines a reinsurance company established by the State and a managing company like TARSIM A.S of which I am Chairman of the Board. The Spanish mechanism has its own legal entity and is more independent than ours. In our system, there is no specific reinsurance company and we work with international reinsurance markets. In short, there is only an organisational difference between the two models. Spain is an important model for Turkey as the Spanish system has been functioning successfully for about 30 years. The Turkish model, on the other hand, is showing steady growth and in my view, it will become as robust as the one in Spain in the coming years.

**The international press has already reported on the completion of the Marmaray rail link under the Bosphorus. Transport in Istanbul will improve significantly; could you tell me what other important infrastructure works are in process or planned in Turkey in the near future?**

The Third Bosphorus Bridge and the second tunnel for motor vehicles are the two main projects being planned within the context of connecting the Asian and European continents. In addition, the construction of two tunnels at a total cost of nearly USD 32 Million continues. One of these tunnels is about to be finished.

**We would welcome your comments about the Turkic Republic insurance markets, such as Kazakhstan and Azerbaijan for instance, and their foreseeable development.**

These are growing and promising markets. Most

of the premiums are generated by the private sector mainly, which is a very positive sign. Kazakhstan especially is a rapidly developing country which reflects this in the remarkable growth of the insurance market in recent years. We must admit that the growth of insurance business in these countries is mainly dependent on the countries' infrastructural and industrial development. However, taking the increasing level of educational and cultural development of the public into consideration, there is no reason for not being optimistic in that respect as well.

Turkish investors are the second largest group of foreign investors in Kazakhstan with more than 2.5 billion USD. The Turkish insurance sector is doing business in Kazakhstan in a cooperative way with local companies to serve their Turkish clients for insuring their investments such as hotels and big shopping malls,

particularly in respect of engineering and property risks. Business seems to be dropping off nowadays because of the global crisis which has had a major effect on both economies, but I still believe that these countries are big opportunities for our sector, although I think that we unfortunately were late in taking positions and action in these two markets. I also believe the size of the Turkish market is a great opportunity for any foreign player wishing to use their presence in Turkey as a bridge to these markets.

Association of Insurance and Reinsurance Companies of Turkey

[http://www.tsrbsb.org.tr/tsrbsb\\_eng/](http://www.tsrbsb.org.tr/tsrbsb_eng/)

TARSIM

<http://www.tarsim.org.tr/>

**The Turkish Catastrophe Insurance Pool (TCIP) has been working for almost nine years. It is another model of public and private partnership. How do you think it will evolve in a medium term loss-free scenario?**

The Turkish Catastrophe Insurance Pool (TCIP) was launched by the Turkish government in cooperation with the World Bank in 2000 after the big earthquake of 1999. TCIP is a compulsory insurance programme that provides earthquake cover to householders up to certain limits with affordable premiums depending on risk zones, construction types and gross floor space of houses.

TCIP not only aims to alleviate the economic burden on the State in the event of an earthquake, but also ensures that risks are shared within the country with a certain amount of risk transfer to international markets through reinsurance. It also increases insurance awareness among the Turkish population; makes the insurance system apply sound standards to construction and guarantees the accumulation of necessary long-term resources for the compensation of earthquake losses.

TCIP is an important example of a functioning public-private partnership. While public authorities are responsible for the establishment of the legal framework, the conduct of regulatory supervision, the provision of risk management support and disaster management, the private sector is in charge of sales, operational services and claims management as well as the provision of risk management support.

However, the penetration level is currently 23%. This simply means that out of 100 households, only 23 are within the system. In a medium term loss-free scenario, we do not expect the penetration level to increase as house owners are not adequately encouraged to buy insurance. There are no penalties or fines imposed. The lack of State interest, support and long-term strategies that transcend governments are the main obstacles.

During the TCIP's first five years of existence, it was not been possible to accumulate a substantial amount of funds. However, the total amount of accumulated funds had reached almost one billion TL by 27<sup>th</sup> April 2009. When a medium-term projection is made in terms of a loss-free scenario, TCIP is expected to create a fund of about 3-4 billion TL in 7 years.





## interview to **Pedro Duque**

General Manager of Deimos Imaging  
and astronaut on reserve leave of the  
ESA (European Space Agency)



Pedro Duque was born in Madrid on 14<sup>th</sup> March 1963. He graduated from the Polytechnic University of Madrid (Higher College of Aeronautical Engineering) with a Degree in Aeronautical Engineering in 1986. It was at this point that his career became meteoric. He started working as an intern in GMV (Flight Mechanics Group) and was appointed to the European Centre of Space Operations (ESOC) of the European Space Agency (ESA) in Darmstadt (Germany) shortly afterwards. He worked in the Precise Orbit Determination Group, participating in the flight control team for two ESA satellites, until 1992.

In May 1992, he was selected for the ESA's Astronaut Corps. He underwent Basic Training at the European Astronaut Centre (EAC) in Cologne (Germany) and then attended another course at the Russian TSPK astronaut-training centre, in Star City, as part of a project designed to establish open cooperation between the ESA and the MIR Russian space station. Upon his return from Russia in 1993, he began to prepare for the joint ESA-Russia Space Mission called "EUROMIR 94", receiving the official qualification of Scientist-Astronaut for the Soyuz and MIR spacecraft. He was selected as a member of the reserve crew and ground communications coordinator liaising with Russia for the EUROMIR 94 space mission in May 1994. In 1995, he trained in Star City to support the joint ESA-Russia "EUROMIR 95" space mission. He was appointed Reserve Scientist-Astronaut for the Life and Microgravity Spacelab mission that same year.

In 1996, Pedro Duque trained as a NASA Flight Engineer and began working at the Johnson Space Centre. In early 1998, he was appointed member of the crew of the STS-95 Space Shuttle Flight, in a joint mission for NASA, the ESA and the Japanese Agency NASDA. On 29<sup>th</sup> October 1998, Pedro Duque went into space for the first time, as a Flight Engineer of the "Discovery" Space Shuttle. Between 1999 and 2003, he worked on the European components of the International Space Station, in the European Space Research and Technology Centre (ESTEC) situated in Noordwijk (Holland). He was among the first set of European Astronauts to qualify with advanced training in 2001 and he was Flight Engineer for the Cervantes Space Mission between 18<sup>th</sup> and 28<sup>th</sup> October 2003.

Pedro Duque has participated in four spaceflights, all related to scientific research, which makes him an expert in adapted space experiments. After his last spaceflight, the ESA appointed him Operations Director of the Spanish User Support Operations Centre for the International Space Station, which is part of the "Ignacio da Riva" Microgravity Institute of the Polytechnic University of Madrid.

Pedro Duque has been on leave of absence from the ESA since October 2006, although he remains on standby should he be needed. Among other special honours, he has received the Russian Federation's "Order of Friendship" from President Yeltsin (March 1995) and the Great Cross to Aeronautical Merit from HM the King of Spain (1999). He has been a Member of the Royal Engineering Academy of Spain since April 1999. Along with another three astronauts, he received the Prince of Asturias Award for International Cooperation in October 2009.



ISS (International Space Station) NASA/courtesy of nasaimages.org

*“There is a great accumulation of risks in the space”*

Pedro Duque, the first Spanish astronaut to visit space and employee of the European Space Agency (ESA), reveals himself to be a person of simple pleasures, who is passionate about space and adept at overcoming great challenges. Here, we join him to review some of the milestones and myths of the space race and learn more about the international aeronautics and space industry, in which Spain has been playing a role for more than 20 years, thanks to its involvement with the ESA. As General Manager of the first completely private European company to put its own satellite into orbit and sell its Earth imaging services, he provides us with some interesting facts.

**How did you first develop an interest in space and when did you first feel the desire to become an astronaut?**

I've always had an interest in aeronautics, even from my childhood. The reason is simple: my father was an air traffic controller and we have always shared an interest in aeroplanes. He used to take us to the control tower, in the airport. I even tried the flight simulator once, one of those that pilots use to train. Undoubtedly, this spurred my interest in aeronautics and encouraged me to become an aeronautical engineer and it was a small step from there to developing an interest in space.

**How did you first get the chance to become an astronaut?**

When I was finishing my degree, the government approved a new Law on Science, under which Spain would begin to take part in inter-

national R&D (Research and Development) projects and become more involved in international programmes and agencies. One of these organisations was the European Space Agency (ESA) and one of the selected laboratories was the one at the university where I was working as a research fellow. We formed a group that began formalising contracts with the ESA. The opportunity came about because the Spanish Government began to allocate more resources to international projects from that moment onwards, which would come back in the form of contracts with the industry; some of the other aeronautical engineers and I became converts to aerospace engineering.

**How were you selected from the different candidates wanting to work at the European Space Agency?**

Let me tell you a story: when the results of the

**The first time you look through the window and see Earth, with its dark horizon and the Sun, is indescribable.**



ISS (International Space Station). NASA/courtesy of nasaimages.org



Barajas Airport, Madrid

## A private satellite that makes history

### As an astronaut turned businessman, how does the corporate world compare with your experiences of physical risk in space?

There are similarities. Though I must emphasize that the company is not mine, I am only the Managing Director. In space programmes, the astronaut is up there, at the top of the system, which means that everyone looks to you for advice. However, the experience of being an astronaut, of living in space, gives you a certain approach, where you are more prepared to listen to others than to establish strict chains of command.

### Tell us about Deimos Imaging and where the capital came from.

Deimos Imaging is the first fully private European company to operate its own Earth Observation space satellite. The share capital came from a Spanish corporate group, called Elecnor. The group founded a company 7 years ago, called Deimos Space, which employs young engineers from Spain and carries out work for the European Space Agency. Deimos Imaging is an offshoot of that initial company.

**Given that the Deimos project creates added value through R&D&I (Research, Development and Innovation), how far would you say Spain has come? How strong is the Spanish aerospace industry?**

selection process were about to be published I began to receive calls from all the radio stations and TV channels, even before anyone contacted me officially. The authorities in charge of the selection process inform the government first and afterwards the candidates. But there are so many people involved in the process that any news always gets leaked.

### When did you first travel to space?

I first travelled to space on 29<sup>th</sup> October 1998. I spent a year in Russia before that. I lived in Star City, a small village with only 5,000 residents and the location of the space training and research facility, with its technicians and engineers. The place has restaurants, schools, cinemas, everything you might need to make life pleasant for the people living there, because

Spain first began to contribute to the European Space Agency about 23 years ago. Since then, the country has built and consolidated an aerospace industry. Initially, our share in the project was only 5%. It is currently 7% and will reach 10% in the future. It would be almost impossible to have a 100% share. Spain fits in well in certain niches. We have between 2,000 and 3,000 employees who are 100% dedicated to space work. There is a lot of uncertainty at the moment, because it is difficult to predict how things will develop or determine whether it is best to cut spending in the light of the financial crisis or to boost investment in R&D&I on the supposition that it will help us come out of the crisis sooner. Nevertheless, the aerospace industry could find itself in a better position.

### Can the European Galileo project help Spain's aerospace industry?

It is helping. Spain has a share of 10% or more in the project. In fact, our company manufactures the most critical computers within the whole Galileo system. They are built in Tres Cantos, on the outskirts of Madrid. Some extremely difficult and critical tasks are allocated to Spain, which is proof of our enormous potential.

**Obviously, Deimos Imaging has carried out its viability studies, knowing that it will be compe-**

Star City was the product of Soviet planning, which, at least where questions of space were concerned, was autarchic.

**Where else can ESA astronauts receive training?**

The International Space Station is run by the USA, Russia, Japan, Canada and the ESA, representing many European countries. All these countries have centres for training astronauts. Right now, anyone who is going to spend any time in the Space Station has to learn how it works, and each centre specialises in one field, which means that the trainee has to pass through all of them. This means that they spend their lives travelling.

**Moving on to sensations, how does it feel to see the Earth from space?**

It is incredibly overwhelming, even though we all receive training and are fully prepared for it. Obviously, we have seen the photographs and videos before we embark on a mission and we receive training so that we are prepared for the fast movements onboard the spacecraft. And if there is anything to see below, the onboard computer will tell you exactly where it is. Even so, it is awe-inspiring. The first time you look through the window and see Earth, with its dark horizon and the Sun, an indelible memory is left.

**What do you think of during those moments?**

I do not know what to say, to be honest. All the preparation and training teaches you to detach yourself from the situation, to feel as little as possible. I usually compare it to people who climb mountains: they make a titanic effort to

**ting with other companies that provide similar services. What would you say constitutes Deimos Imaging's competitive advantage?**

Obviously, there are already Earth Observation Satellites in space, but these are used for experiments, as prototypes. What we have done is design a satellite that can take images that are much larger, but more importantly, that can take them much more frequently. This creates more opportunities as we can monitor Earth more intensively. The satellite was launched in mid-July 2009, using a Russian rocket called the Dnieper, which is an intercontinental ballistic missile adapted for these purposes, which has been used and tested extensively.

Everyone is waiting to see the quality of our images before signing any contracts. Our satellite Deimos-1 rotates around Earth, from pole to pole, at a height of 600 kilometres. The satellite has a guaranteed life of 5 years, but satellites from the same series have lasted longer, between 8 and 10 years. It all depends on how we treat it. I must clarify that we purchased this satellite as a capital good and that the added value comes from the applications that we have developed and the quality of these applications. The monitoring base is situated in Boecillo, Valladolid. We have invested approximately 30 million euros in the whole project.

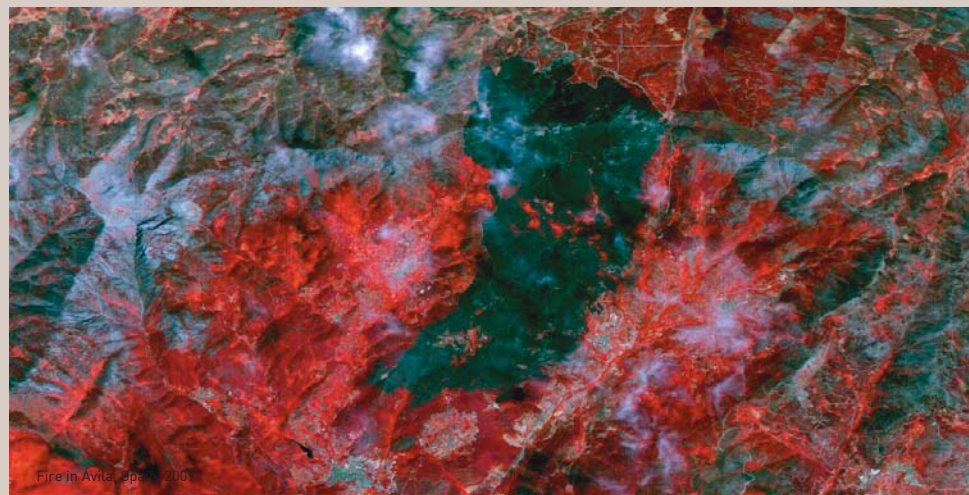
**What is the expected ROI?**

If it is positive, it will be a great achievement.

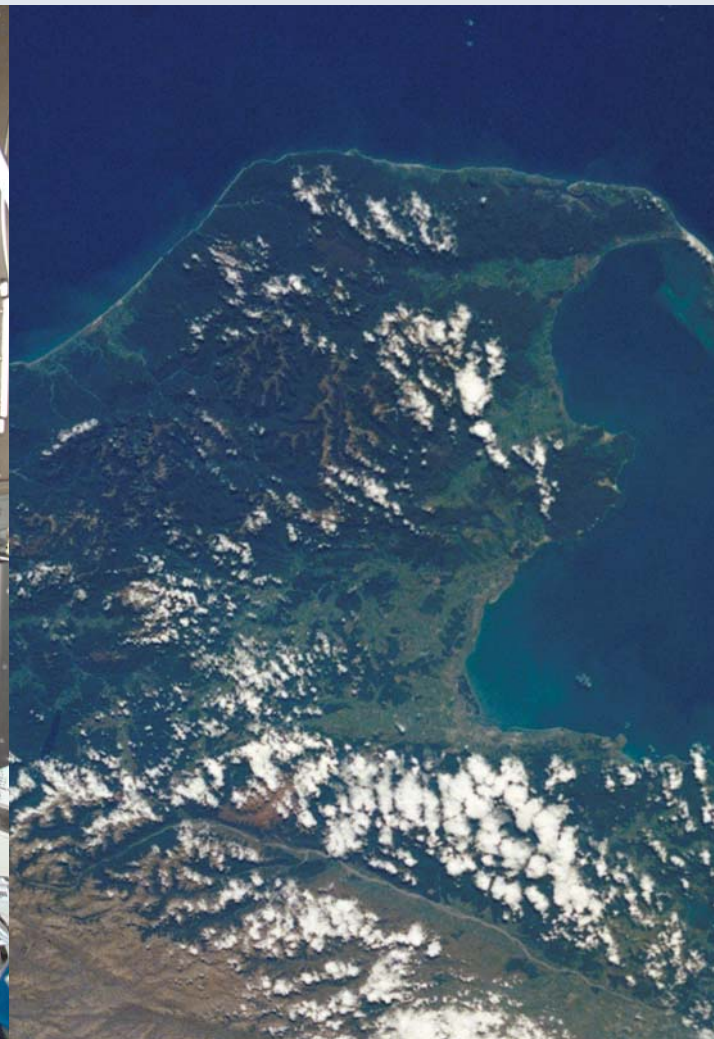
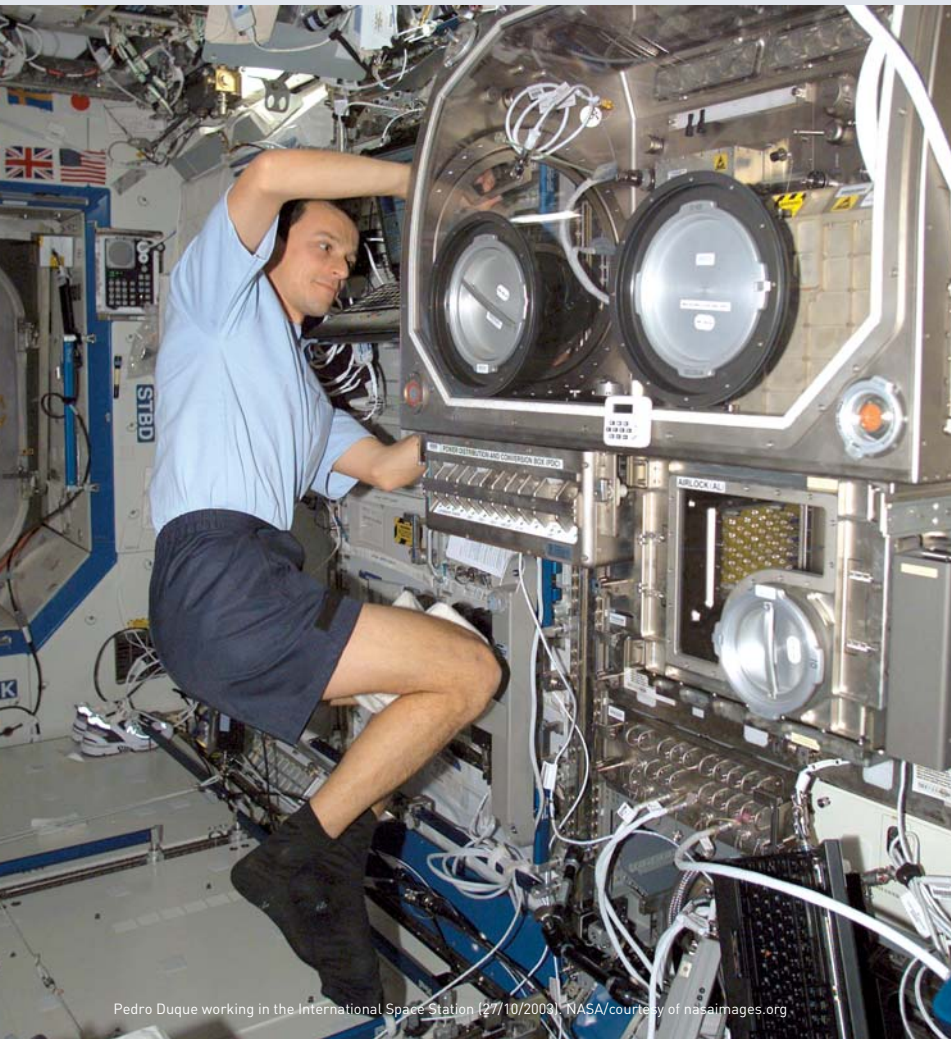
**What can you tell us about the insurance schemes that are developed for these space programmes?**

There is a great accumulation of risks in space, obviously, because you are pushing technology to its maximum limits. The margins of error in our designs are very narrow, less than 5%. Evidently, we need insurance. It is essential whenever you embark on a space project and it is great that we can find insurers that specialise in insuring space projects in Spain.

**Deimos Imaging is the first private European company to operate its own Earth Observation Satellite.**



Fire in Avila, Spain, 2009



reach the peak, they look around, do whatever it is they have to do there and come back down and they do not think about it too much.

### **What should humanity's immediate objectives in space be?**

I don't see any specific objectives as such. But it is all justified by the desire to explore, to transcend the barriers of knowledge, by the step forward that it represents for the human race, for a country or for a society. This is a special year because on 21<sup>st</sup> of July, we celebrated the 40<sup>th</sup> anniversary of man's landing on the Moon. At the time of the landing, there was a lot of momentum behind the exploration of space, for various reasons. One of them was that the US wanted to be the first country to reach the Moon and so there were numerous experiments on weightlessness or zero gravity, involving many different fields: physics, medicine, biology. There was a whole series of experiments on the effects of gravity. Because of these experiments, we

began to research how cells relate to each other, how life comes about, how we have evolved, how materials behave. And there are many other benefits that we take for granted now that would not have been possible without space exploration and research. As an example, we now have satellites that transmit information practically in real time; in other words, any news or any developments are disseminated instantaneously and this gives us an overall view of the world, which has revolutionised the way in which we understand the world and relate to one another. We are no longer as isolated as we were. We know that any event happening at any time, anywhere in the world, can be reported on the news in a matter of hours and we take this for granted. The same applies to travelling using GPS. We can act as though navigation is no longer a problem. Why? Because we have managed to create a system, a network of 48 satellites in space. And we have also managed to carry large and heavy cargo into space.





MIR Space Station from the Atlantis. NASA/courtesy of nasaimages.org

### **What is it like living with other astronauts in space?**

It is difficult, because you are in a very small space and you have to share everything. It is like crossing the Atlantic in a small sailing boat. You would be short of space. There are specific needs that have to be met when you are living so close together and everyone has to adapt to each other.

### **What do you think about tourism in space for those that can afford the trip?**

It is like everything else in life. Initially, only people with a lot of money could afford to buy a ticket to board a plane. As the industry grew and received finance, it began to design more efficient and comfortable planes, finally creating a form of mass transportation. The same has happened with many of humanity's inventions. The first cars were only available to the wealthier upper classes. Thanks to the large amounts of money paid for these cars, the factories were

able to invest money in R&D, allowing them to make more efficient vehicles that were then accessible to more people.

### **Which countries are currently the dominant players in space?**

The US is still the superpower in space, at least for the moment, followed by Russia, which specialises in the construction of rockets that can carry very heavy cargo into space. Progress in Europe is not as efficient and very difficult, but that is to be expected, as ten times less public money is allocated to space programmes in Europe. We do stand out in the areas in which we specialise and we are on a par with the US or Russia in that sense. For instance, the European cargo rocket easily competes with the American or Russian, although the Russian cargo rocket is probably more cost-efficient.

I was at the last International Astronautical Congress and learnt that India is only waiting for the Authorities to sign the necessary documents before it implements its own astronaut training programme and anything else that is needed. The only problem in the US is that space exploration budgets began to decline in real economic terms months before Armstrong even stepped on the Moon and they have been falling steadily ever since.

### **Perhaps that is because there are more pressing problems on Earth, such as fighting hunger, disease or providing education, for example.**

Of course, I agree, but the only way to solve many of these problems is through R&D. As an example, I would cite the extensive research into climate change and the fact that we now know a lot more about it thanks to the observation of the planet from space. It is also true that the current lack of funding in the western sphere has meant that other great powers, such as China, have been able to catch up and meet the challenges of space exploration with very little funding, but this is also thanks to the fact that they have had access to the knowledge and skills that other countries developed beforehand through experimentation and research.

The USA and Russia have been investing in space exploration and research for the last 50 years, under the belief that it ultimately boosts the self-confidence of a nation. It constitutes an enormous stimulus to education and training. People perceive that their country is at the cutting edge of something as thought provoking and

**Space tourism is no different to what humanity has experienced with other inventions.**

## Milestones in the Conquest of Space



a. Sputnik Satellite  
 b. Front Page: Yuri Gagarin, first human in space  
 c. Buzz Aldrin's footprint on the moon  
 d. Skylab Space Station

NASA/courtesy of nasaimages.org

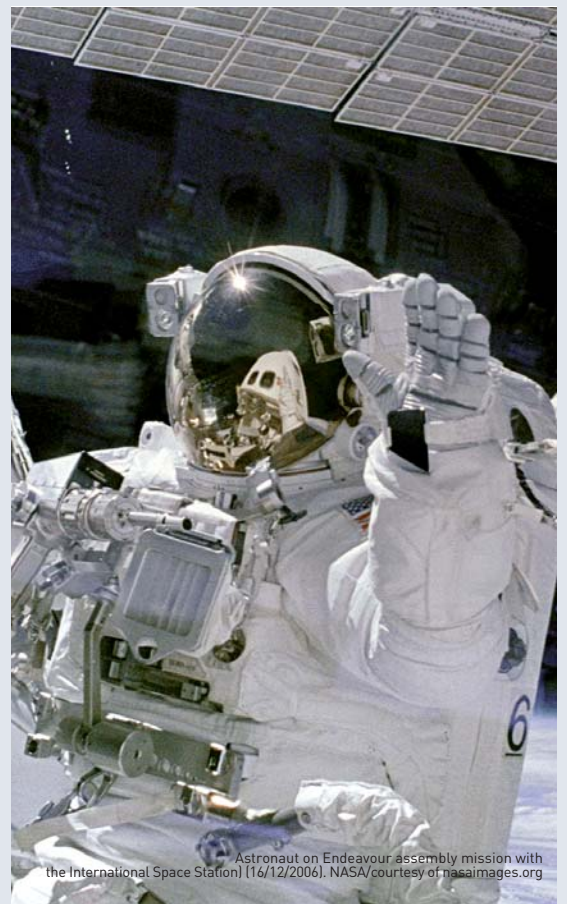
- ▶ 4<sup>th</sup> October 1957. The USSR launches the first Earth-orbiting artificial satellite, called Sputnik I. It remains in orbit for three months, circling the earth every 96 minutes. Sputnik II would later take the dog Laika into space.
- ▶ April 1961. The Russian cosmonaut Yuri A. Gagarin is the first man to see Earth from space, on board the Vostok 1 spaceship.
- ▶ March 1965. The Russian cosmonaut Alexey A. Leonov is the first human to conduct a space walk.
- ▶ 1966. The Russian spacecraft Luna 10 lands on the Moon.
- ▶ 20<sup>th</sup> July 1969. Man walks on the moon. The feat is achieved by American Astronauts Neil A. Armstrong, E.E. Aldrin and M. Collins, as part of NASA'S Apollo 11 mission.
- ▶ 1971. The first manned orbital space station, the Russian Salyut 1, is launched. The crew spends three weeks in space but perishes on re-entry to Earth.
- ▶ May 1973. The US puts the first space laboratory, called the Skylab, into orbit; three different crews will visit the station.
- ▶ 1986. The first module of the Russian MIR (Peace) space station is put into orbit; the station will remain operative for 15 years.
- ▶ 1995. The Russian cosmonaut Valeri Polyakov breaks the record for the longest period spent in space by man. He spends 438 days in the MIR space station, between January 1994 and March 1995.
- ▶ November 1998. The first module of the International Space Station, in which 17 countries are involved, is put into orbit.
- ▶ 9 space missions take place between 2000 and 2004. The new century sees the space race accelerate, with numerous space missions. At the same time, new projects with ambitious objectives are developed, such as the installation of a permanent base on the Moon or a manned space mission to Mars.

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awe-inspiring as outer space. The US is a world power because it dominates space. China and India have taken note of this.

### What would you say is the key to the USA's dominance of the space race?

The USA is sufficiently open to public debates as a country. Where space exploration is concerned, we have yet to see what President Obama's approach will be. Nevertheless, the US is the most technologically advanced country in the world and should be able to put a man on Mars in coming years. It is also a question of budgets: NASA received only 0.5% of the US's Federal Budget this year, which is not very much, but it is still 10 times more than the sum invested in Europe. If there is something that needs to be done industrially, it can be done in the US, which is currently the benchmark country. Until 20th January, the US refused to partner or collaborate with any other nation for the project of establishing a permanent base on the Moon by 2020. Now it is all up in the air. Clearly, the US's policy with regard to space is to consolidate its dominant position, although it is open to cooperation where certain matters are concerned.



Astronaut on Endeavour assembly mission with the International Space Station (16/12/2006). NASA/courtesy of nasaimages.org

# agenda

## COURSES ORGANISED BY ITSEMAP STM (MAPFRE SERVICIOS TECNOLÓGICOS, S.L.)

Risk Management and Insurance Expert Cycle 2010	Method	Date	Venue
Seminar 1 Risk identification and assessment, estimation of losses and appraisal of assets.	Personal attendance	3 <sup>rd</sup> and 4 <sup>th</sup> March	Madrid
Seminar 2 Integral safety, reduction and control.	Personal attendance	31 <sup>st</sup> March and 1 <sup>st</sup> April	Madrid
Seminar 3 Financing of risks: insurance programmes (I).	Personal attendance	28 <sup>th</sup> and 29 <sup>th</sup> April	
Seminar 4 Financing of risks: insurance programmes (II) and ART.	Personal attendance	19 <sup>th</sup> – 20 <sup>th</sup> May	Madrid
Seminar 5 Design and implementation of a risk management programme.	Personal attendance	9 <sup>th</sup> – 10 <sup>th</sup> June	Madrid

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