

# General Catalogue of **Activities**

Partners in excellence



## Tragsa Group

Partners in excellence

GRUPO TRAGSA is formed of a group of state-owned companies and is a member of the state holding company, Sociedad Estatal de Participaciones Industriales (SEPI). Over our more than 30 year history, TRAGSA has become a benchmark integral service provider in the execution of projects for government agencies. The core services of TRAGSA are:

- | **The environment**
- | **Infrastructure**
- | **Building and Architecture**
- | **Water**
- | **Services, Agricultural Farming, Forestry and Fishery Production**
- | **Healthcare**
- | **Studies, Technical Support and Consulting Services**
- | **Emergency services**



Regardless of the area of activity, the unique difference of our company lies in its proven national and international track record, its capacity for adaptation and rapid response to customers' needs, as well as expertise in R&D&i that allows us to develop cutting-edge technology solutions and top quality services.

The TRAGSA Group is formed of two companies, TRAGSA, which is responsible for executing works and services, and TRAGSATEC, which carries out engineering works and provides technical assistance in all the Group's activity fields. Through these two companies, the Group has the capacity to become involved in all the stages of any project, from its conception and design to its execution.



**TRAGSA is a state-owned company, an integrated innovative solutions provider, at the service of the Administrations**

With over 200,000 actions to its credit, the TRAGSA Group provides customers with these solutions, thanks to a multidisciplinary team of highly-qualified employees and the development and use of cutting-edge technology.

As a state-owned company, we speak the same language as the Public Administrations and are experts in the requirements and special characteristics that must be met by each project and tender. We have the in-house technical and human resources needed to design and implement specific solutions tailored to customers' needs. As an Integral innovative solutions provider, our goal is to achieve the highest degree of efficiency possible in the wide range of professional activities that comprise our core services, in all of which the Group has the highest level of specialisation. All of our services are governed by criteria that ensure sustainable development and enhancement of the environments in which we operate.

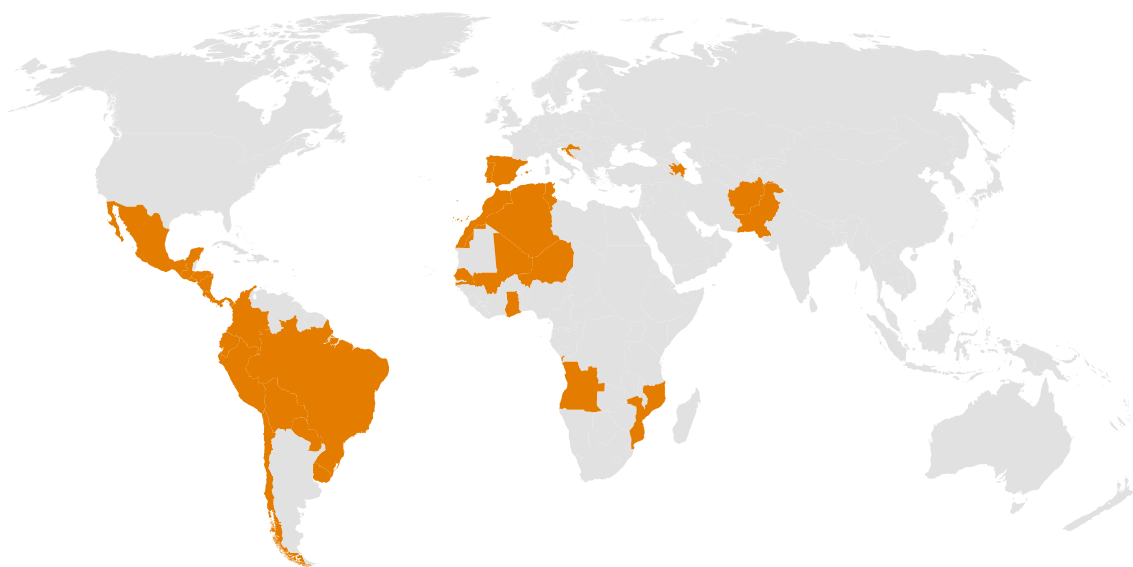


Our extensive territorial coverage and enables the TRAGSA Group to play a significant role as a driver of local economies through systematic collaboration with local suppliers in the wherever area we work.



**Capacity to adapt and respond, expertise in R&D&i to provide cutting-edge solutions and top quality service**





 Countries where projects have been developed



## National and international coverage

TRAGSA operates across throughout Spanish territory with offices in the 52 provinces of the 17 autonomous regions. The territorial coverage of TRAGSA enables to provide a rapid, efficient response to any tenders we may receive from central, regional and local governments.

TRAGSA collaborates in over 120 Spanish cooperation projects in more than 35 countries in northern Africa, Sub-Saharan Africa, Latin America and the Caribbean, Asia, Europe and the Middle East, providing the company with an outstanding international profile. All of these project have resulted in the transfer of knowledge, experience and technology, thus contributing the economic development of the countries and communities where we have worked.

In the international arena, TRAGSA participates in bids either on an individual basis or through consortiums with other Spanish or international undertakings. Our extensive experience represents a solid platform for the internationalisation of the activity of countless private and state-owned companies.



### **TRAGSA: added value**

Thanks to TRAGSA's recognised track record, the TRAGSA Group is able to adapt to the specific needs proposed by each customer and offer a customised professional service.

The presence of TRAGSA in and knowledge of the territory enable the Group to optimise available resources and offer an integrated, flexible service which guarantees that mandates are not only completed successfully and on time but that the service and the end product are top quality.

The core commitment of TRAGSA is to help customers solve their problems, making their work easier throughout the entire process and ensuring the actions we carry out will last over time.

**If you can  
imagine it,  
TRAGSA can do  
it for you**



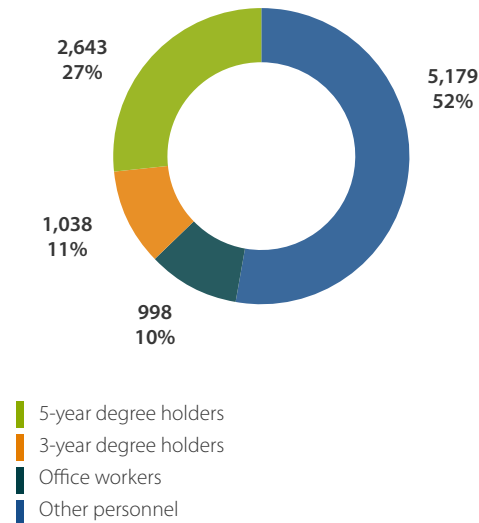


### A multidisciplinary team

Our main asset is our multidisciplinary team, TRGSA employs nearly 10,000 highly-skilled and specialised employees. The Group currently employs 3,600 technicians holding a wide range of university degrees and specialist subjects and over 6,200 employees with specialised vocational training in diverse fields such as forestry, agriculture, environmental technology and management and administration.



Workforce Distribution by Professional Category 2012



- 5-year degree holders
- 3-year degree holders
- Office workers
- Other personnel

TRAGSA is also dedicated to the continuous training of its employees. Our ongoing specialised training provides the Group with highly qualified professionals who are able to apply state-of-the-art techniques and knowledge in different fields of action.

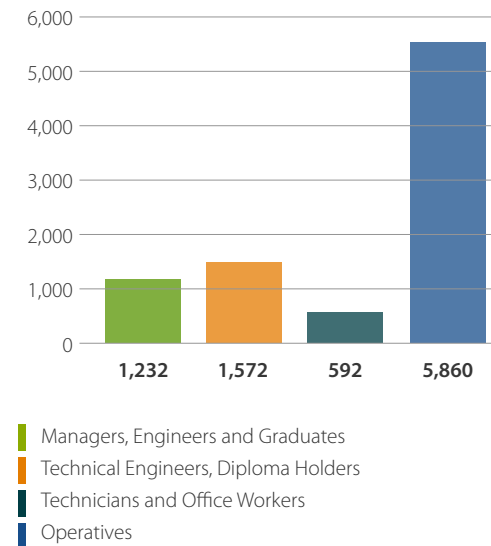
In fact it is our firm belief that training is vital for the professional development of our employees and guarantees the provision of a quality service. The Group provided almost 2,000 courses to over

13,000 employees, accounting for over 219,000 hours of training in the past year.

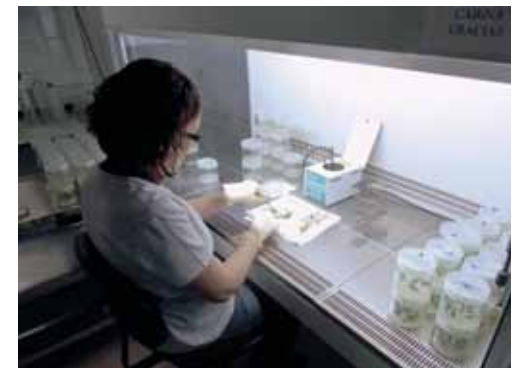
TRAGSA Human Resources policies are geared towards pinpointing, developing and retaining talent, establishing schemes that serve to assess and discover the competencies and skills of all employees.

The presence of TRAGSA in the national and international arena and work capacity allow the Group to offer customers a fast, efficient and reliable solution in complex and demanding situations.

Pupils by Professional Categories



- Managers, Engineers and Graduates
- Technical Engineers, Diploma Holders
- Technicians and Office Workers
- Operatives





### Logistics Capacity

The Group's territorial deployment and the decentralisation of its activity guarantees our capacity for a rapid response in the face of any need. The Group has technical teams and latest generation resources to execute works and services, as well as prevention tasks and emergency troubleshooting. The Group also has five machinery fleets, five territorial workshops, two pre-cast concrete plants (one in León and another in Bolivia) and a nursery which enable it to effectively supply each of the activities it undertakes. This capacity is clearly evident in the more than 3,800 units that make up its fleet of vehicles and forestry and earthwork machinery, as well as the extensive catalogue of ancillary equipment, whose inventory exceeds 10,000 items.





### **A commitment to the environment, quality and innovation**

Assessing and minimising the impact the Group's activity has on the environment is one of our core priorities. To this end every project includes a comprehensive study that allows us to incorporate environmentally friendly measures to reduce the consumption of resources in tandem with limiting the amount of waste generated.

The environment and quality go hand in hand at TRAGSA. All the Group's actions are carried out in accordance with management systems that comply with standards UNE-EN ISO 9001 and UNE-EN ISO 14001. These certificates guarantee that not only that the Group's employees are involved in this commitment but also applies to all external collaborators. Also, the Group activity centres that have the greatest environmental impact are all members of the EU Eco-Management and Audit Scheme (EMAS register).

Another of the characteristics that defines the Group is innovation in all our work. Every year, TRAGSA invests heavily in R&D&i and this has enabled us to design and develop

numerous pioneering tools and solutions in fields such as the use of energy from agricultural and forest biomass; integral water management; geographical information systems; surveillance of protected marine areas; food traceability; the improvement and preservation of forest genetic resources and emergency management and prevention, among other projects. All of our R&D&i activities are designed to increase our capacity to respond to our customers' needs and to expand our service catalogue.

Our company takes part in both national and international research projects in collaboration with universities and public research centres, ranking TRAGSA among the leading companies in the sector. We are currently involved in 21 R&D&i projects in cooperation with over 80 institutions both in Spain and in countries such as France, Portugal, Italy, Greece, Sweden, Ireland, Austria, Lithuania, South Africa, the USA and Australia.

## A firm commitment to local development

The TRAGSA Group's commitment to sustainable development can also be seen in its involvement in improving the environments where it carries out its activities. TRAGSA undertakes part of its actions in conjunction with local collaborators, which contributes to developing the business fabric and job creation in the areas in which we operate. Furthermore, in the case of bids in overseas markets, we compete in consortiums with other private Spanish and international companies.



### Legal status and framework

The companies in the TRAGSA Group are special purpose vehicles and technical services of the Spanish Central Administration, the Autonomous Regions and the powers under their umbrella.

By virtue of applicable laws and regulations, the TRAGSA Group may receive orders for actions, through management delegation, whose execution is mandatory and which are remunerated in accordance with official rates approved by an Inter-ministerial Committee of the Ministry of Agriculture, Food and Environment, whose members are representatives of the Autonomous Regions and the autonomous cities of Ceuta and Melilla.

Rates available on our web page:  
[www.tragsa.es](http://www.tragsa.es)

### The Tragsa group in figures

#### Experience:

36 years managing successful projects

#### Own resources:

10,000 employees and rolling stock of more than 3,800 units including vehicles and heavy machinery

#### Turnover:

Euro 730,315,000 in 2012

#### Implementation:

National and international with projects on four continents

#### R&D&i:

Over 35 R&D&i projects, with an annual investment of Euro 2,716,000

#### Training:

More than 2,000 training courses per year

The environment

Infraestructure

Building and Architecture

Water

Services, Agricultural  
Farming, Forestry and  
Fishery Production

A decorative graphic featuring several birds in flight, scattered across the page. One bird is in the top left, another in the top right, and a group of three is in the bottom right. The birds are rendered in a light, sketchy style.

Healthcare

Studies, Technical Support  
and Consulting Services

Emergency Services

Areas of  
Activity



More than twenty-five years engaged in the improvement and preservation of natural spaces and the biodiversity of ecosystems have made TRAGSA the Spanish company with the most extensive experience in the design and execution of all types of environmental actions. Our track record includes an average of over 1,800 actions per year, both for government agencies in Spain as well as on the international scene, which are geared towards preserving the biological diversity of the countryside, as well as for rural development.

Over the course of the last quarter of a century, the Group has carried out activities in fields as varied as the preservation of land and sea environments, as well as of endangered animals and plant species; the use of game and fish; the prevention and fight against forest fires; the restoration of natural spaces; the undertaking of studies for the regeneration of land and aquifers and the execution of river engineering works. Despite the diversity of our activities, they all have a single common denominator: the search for the sustainability of the natural environment through the application of high-level technology solutions and versatile management, both in extremely complex tasks and in the

simple, through the recurring assignments of requesting government agencies.

Our customers benefit from a diverse array of technical measures that are adapted to the needs of each action. All of our activities apply in-house cutting-edge technology developed by TRAGSATEC and a human team formed of 1,300 forestry engineers, agronomists, agricultural and forestry technicians, biologists and environmentalists who are able to carry out any task in the field anywhere in Spain or overseas as required by the characteristics of the work with an instant deployment capacity.

Our extensive experience can be clearly seen in the following figures: the afforestation of over 145,000 hectares of protective plant cover and the improvement and preservation of another 212,000 hectares; correction works of more than 4,000 hectares of waterways in the Hydraulic Public Domain and the ordinary removal of more than 34,000 m<sup>3</sup> of diverse types of waste (plant and man-made origin), equivalent to over 1,234,000 m<sup>3</sup>, which are coupled with over 36,000 m<sup>3</sup> in emergency actions; the building and/or repair of over 5,000 kilometres of forest tracks, the equivalent of covering the distance between Madrid and Kinshasa

(Capital of the Congo); the construction of more than 6,500 kilometres of paths and nature trails and the upkeep of another 6,000 kilometres belonging to the Nature Trails Program of the Ministry of Agriculture, Food and Environment. All of the above is coupled with the building of a large amount of forest infrastructures to fight against fires (firebreaks, surveillance posts, water points, etc.).

Research work in the environmental field is another characteristic that defines the Group. TRAGSA is a pioneer in developing solutions for power generation from agricultural and forest biomass. We have also developed techniques for the production of forest reproduction material. The company runs its own nursery with current capacity of more than five million plants.

TRAGSA has given support to the Administration in social awareness work. Over more than ten years, the volunteer programs run in the National Parks Network of Spain – the most extensive in Europe – and in the Directorate General of Water have served to mobilise more than 150,000 people in order to foment citizen collaboration in the management of natural spaces and waterways.



**Over twenty-five years engaged in improving and preserving natural spaces and ecosystem biodiversity**





1|

TRAGSA's many successful cases in the area of the environment include some as varied as:

1| Natural Trail recovery programs, which have served to make unused railway tracks, public rights of way and paths in general available for public use.

2| The management and reinforcement of the brigades against forest fires (Spanish acronym: BRIF). The Group has a team of professionals with over 22 years of firefighting experience, with rapid deployment capacity and cutting-edge technology to predict the spread of fires and the geolocation of the brigades. For these tasks, TRAGSA boasts a total of 1,500 specialised employees (150 engineers, 1,100 specialists and other diverse management crews). In addition to the aforementioned human resources, the Group has other resources at its service for these tasks: 10 BRIF Units, 18 EPRIF (Spanish acronym: Integrated Forest Fire Protection Teams) Units – pertaining to the Ministry of Agriculture, Food and Environment – and rolling stock formed of all types of machinery, including heavy equipment.

3| The restoration of deteriorated forest and natural environments or which have suffered natural catastrophes.

4| Preservation of flora and fauna, through the collection of data, the processing of information and specialised technical and scientific advisory services to support the Directorate General of Quality, Environmental Assessment and the Natural Environment of the Ministry of Environment in the nationwide implementation of strategies for the preservation of species such as the wood grouse, the bearded vulture, the imperial eagle, the European mink and the brown bear.



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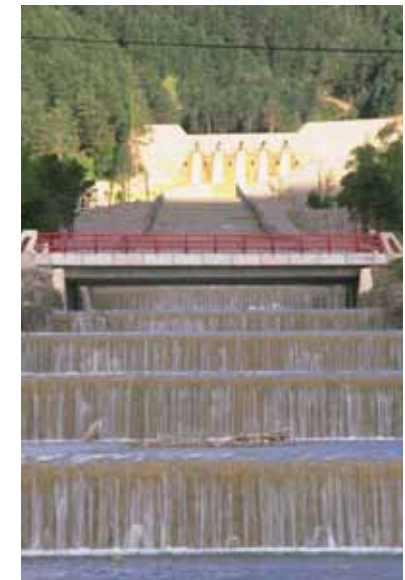


One example is the hydrological-forest restoration of  
**Barranco de Aras in Biescas**

In 1996, following torrential rainfall that reached 500 mm/ hour, a flash flood devastated the Las Nieves campground, located on the alluvial plane just before the mouth on the River Gállego, close to the town of Biescas, Huesca (Aragón, Spain). As a result of the tragedy, 87 people died and 183 were injured.

In the aftermath of the tragedy, TRAGSA received the order to carry out the necessary actions to prevent a similar event from occurring in the future. To this end, dykes were rebuilt in ravines that are tributaries to the flood areas, torrents were altered through canalisation and the forests and waters of the affected basins were restored through afforestation tasks.

These works were carried out between 1996 and the year 2000 and accounted for a two-stage investment of 14 million euros. The figures give an idea of the size of the action: the adaptation of debris over an area of 140,000 m<sup>3</sup> of land; the construction and renovation of structures, which required the use of more than 70,000 m<sup>3</sup> of building materials (stonework and cyclopean masonry, reinforced concrete) and their subsequent integration into the environment through planting and hydro-seeding.



In the environmental area, TRAGSA carries out activities and offers solutions for:

### **Forestry and forest management**

- | Strategic planning of forestry policy and countryside management.
- | Projects and actions for the restoration of forested areas.
- | Afforestation, thinning, pruning, land clearing and removal of forest waste.
- | Forest use and its application to bioenergy.

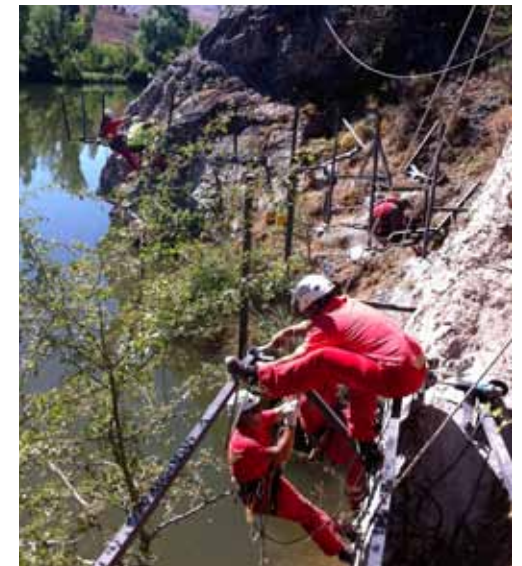
### **Wildlife and Marine Life**

- | Management of fauna and the construction of infrastructures for the conservation of stocks.
- | Sanitary monitoring, tracking and surveillance (coral reefs, warrens, enclosures, fish ladders, etc.).
- | Game and fish usage.
- | Endangered species breeding and recovery centres.



### **Biodiversity**

- | Inventory, diagnostic studies, characterisation and monitoring of flora and fauna species.
- | Activities for the conservation of endangered flora and fauna in land and marine environments.
- | Tracking and monitoring of invasive species.
- | Preservation of genetic resources.
- | Development and implementation of national, international and regional laws and regulations on the conservation of biodiversity, the preparation of strategies, preservation and recovery plans (including the design of specific methodologies, field work and laboratories).



### Conservation, development and recovery of spaces

- | Inventory, diagnostic studies and monitoring of land and marine habitats.
- | Restoration of natural spaces.
- | Conservation, surveillance and monitoring of important natural land and marine areas.
- | Preparation of diagnostic studies on soil and aquifer regeneration.

### Forest-water rebalance and the fight against erosion

- | Agro-hydrological planning of water basins, projects and works to regulate torrents and activities in waterways.
- | Studies on the regulation of the public domain and the calculation of flood damage and reservoir management.
- | Design and execution of river engineering works.
- | Preparation of the National Inventory of Soil Erosion.

### Prevention, surveillance and fight against forest fires

- | Forest fire prevention planning.
- | Surveillance and preventive actions.
- | Creation of infrastructure, opening up of forest roads and firebreaks.
- | Management of fire-fighting teams.



### Key facts

#### Experience:

36 years

#### Employees:

Estimated annual average of 2,500 in conjunction with another 3,000 dedicated to surveillance and fire-fighting tasks

#### Activities:

2,300 (2012)

#### Scope of action:

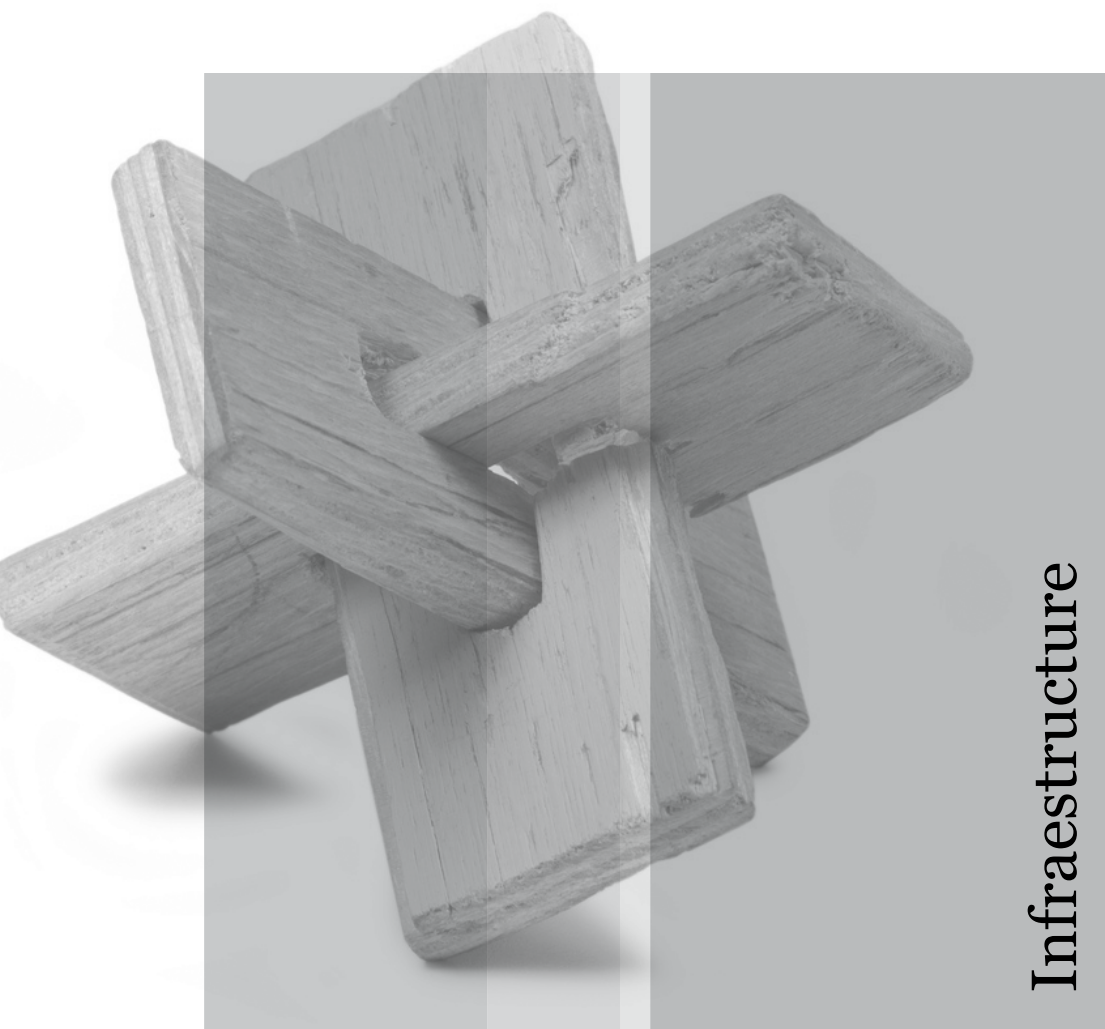
National and International

#### R&D&i:

9 projects in progress

#### % of Activity:

34 % (2012)



## Infraestructure



TRAGSA's specialisation in the field of infrastructures is especially noteworthy, in particular in the rural environment. The service that the Group renders to the Public Administrations and society in general in this field is the design and construction of civil engineering works within extremely tight deadlines and budgets and under strict quality parameters.

Over the last three years, the Group has completed 3,500 land, river, marine and aerial engineering works. These works range from the repair of railway station platforms to the design, production and management of projects and communication works, jetties, heliports, development works, as well as structures for public use such as walkways, wildlife crossings, observatories, scenic overviews, rural pathways and recreational areas (parks and gardens).

In those areas where the Group has identified a need, we undertake special R&D&I work to develop unique solutions tailored to the needs of the customer and of the natural environment where they are located.

TRAGSA has built over 7,000 kilometres of nature trails throughout Spanish territory, the equivalent of covering the air distance that separates Madrid from Havana (Cuba). Thanks to these works, we have been possible to recover ancient infrastructures that have resumed their importance in the economic development of the rural environment.

TRAGSA also works on projects for improving society's awareness and enjoyment of nature: bird and landscape overviews, shelters, access to beaches, ethnographic museums, promenades, recreational areas and the recovery of deteriorated environments. More than 50 beaches across Spain now have accesses that are easier and more integrated into the landscape thanks to the initiative of the Public Administrations and the work of TRAGSA.

Our extensive experience in infrastructure is not limited to the national arena, where we have collaborated with the water authorities and ADIF (Railway Infrastructure Administrator) on the new High-Speed Line infrastructures, but also extends to the international arena, where we have been tasked with undertaking reconstruction works in the province of Badghis in Afghanistan.

The Group is present in 52 Spanish provinces enabling us to provide a rapid and efficient response. On the Group level, we have a specialised workforce of over 1,800 employees, of which 15% hold honour degrees in Civil Engineering, Agricultural Engineering, Architecture and Industrial Engineering. The excellent academic background and qualifications of TRAGSA's employees allows us to successfully tackle any engineering and infrastructure work, regardless stage of the project.





The Group develops specific products and technologies that are adapted to the natural environment

Some of the most outstanding examples of TRAGSA's activity in this area are:

- 1| The creation of a photovoltaic solar power generation plant to provide the island of La Cabrera (Balearic Islands) with a self-sufficient power supply.
- 2| The construction of the Seu de Urgell white water course on the River Segre for the 1992 Olympic Games and of the artificial rough water canal in the enclosure of the Zaragoza World Exhibition in 2008.
- 3| The construction of the Vallforners reservoir in the Natural Park of Montseny (Barcelona), a considerable hydraulic engineering work measuring over 62 meters high.
- 4| The production, by our factory in Mansilla de las Mulas (León), of precast concrete walling which enables us to assemble, in the event of an emergency, a water purification system in any point in Spain in less than 24 hours.
- 5| The Group has worked with the Ministry of Agriculture, Food and Environment in the starting-up of the Nature Trail and Non-Motorised Itineraries Observatory.
- 6| The improvement of paths in municipalities included in the rural environment of Cantabria.
- 7| The unique action on the Cares route (Asturias), where an overhanging metallic structure had to be built to link two parts of the path that had been separated by a landslide.
- 8| The preservation and improvement of road infrastructure to increase the forestry competitiveness of the countryside managed by the Autonomous Government of Andalusia (Almeria).





6|

Among the most innovated actions we have performed, we would highlight:

**9|** The design and production of special concrete formwork that simulates natural stone and provides efficient protection against hillside and ravine landslides without the marring the beauty of the natural landscape by these retaining walls.



8|

**10|** The design and production of special railway platforms for the blind and people with reduced mobility.

**11|** The building of a walkway across the River Miño (Orense) which allows the geographic features of mountains and gorges to be crossed more easily.



7|



9|



10|



11|



The transformation of the  
**La Chureca landfill in Managua (Nicaragua)**

In early 2013, the Spanish Agency for International Development Cooperation (Spanish acronym: AECID) in coordination with local authorities, inaugurated this landfill in Managua where TRAGSA has spent three years sealing it, building a recycling plant and preparing the land for the proper construction of new homes for the beneficiaries in the area. This engineering work had three sides: social, environmental and economic.

The transformation of the landfill and the creation of a recycling plant represented a complex, environmentally friendly assignment, thanks to the sustainable and profitable management of urban waste. The new plant employs 516 people and enables the materials (plastic, paper, metal, glass, etc.) not only to be classified and then sold, as well as the compacting of the resulting inert waste, which can be marketed as industrial fuel.

La Chureca was an uncontrolled landfill which generated considerable social problems for the local community. Through its transformation, 258 families who worked and lived in the landfill have benefitted directly, as they now have decent homes, and 16,000 people from the local community have benefitted indirectly.

Source <http://www.exteriores.gob.es/>



In the area of infrastructures, TRAGSA carries out activities related to:

#### Land, sea and air communication

- | Preliminary studies, design, projects and communication works for land, sea and air environments.
- | Overpasses and underpasses.
- | Development and construction of infrastructure for vehicles, people, livestock and wildlife, jetties and heliports.

#### Urbanisation

- | Studies and projects on sustainable planning and the deployment of basic infrastructure, development works, electrification, parks and gardens.

#### Public use

- | Design, projects and works for observatories, scenic overviews, recreational areas and rural trails.



#### Key facts

##### Experience:

36 years

##### Employees:

1,800 calculated in 2012

##### Activities:

1,082 in 2012

##### Scope of Action:

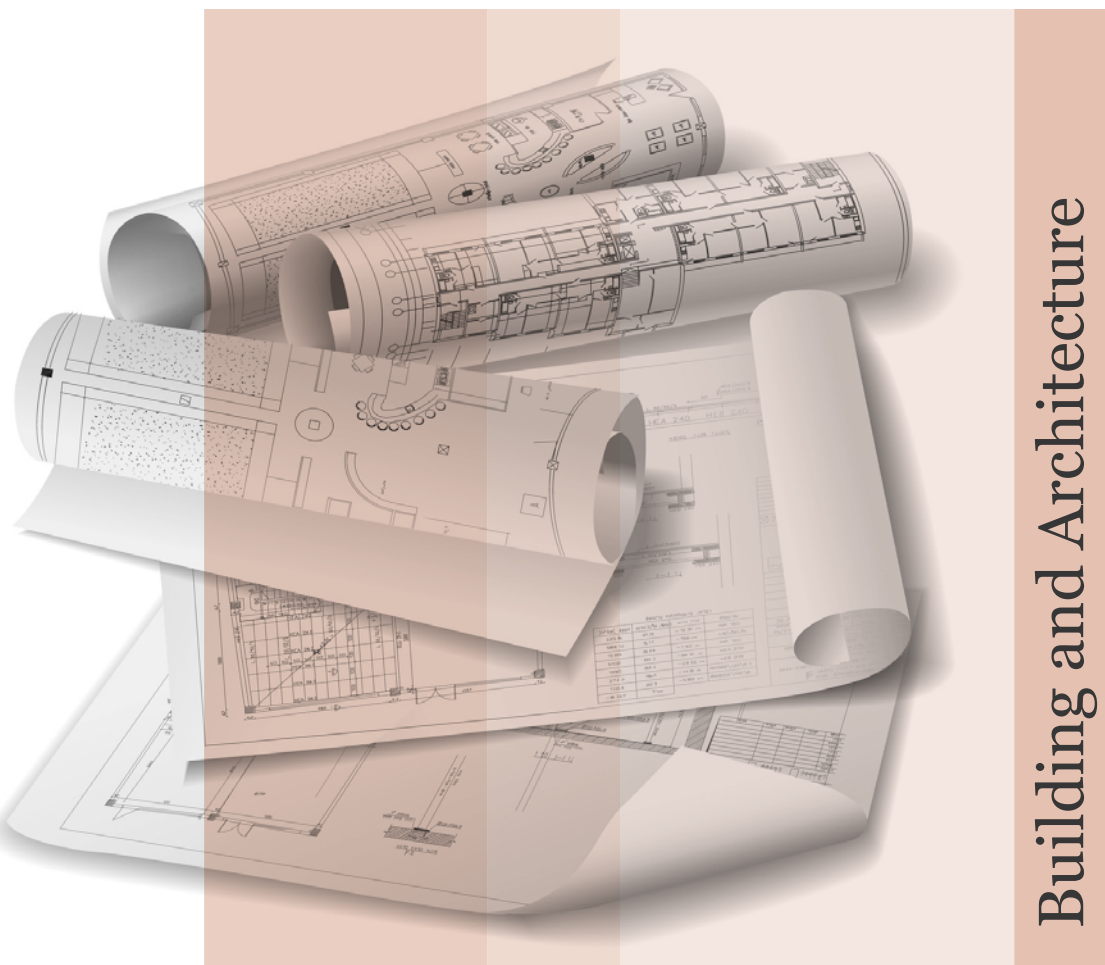
National and International

##### R&D&i:

5 projects in progress

##### % of Activity:

20 % (2012)



## Building and Architecture

The Public Administration has a large state, regional and local real estate portfolio which in many cases is very old and used for a wide variety of purposes. The need to optimise these properties and adapt them to new needs, as well as to sustainability and energy efficiency requirements demanded by present-day society, has led TRAGSA to create a specialised unit in this field.

TRAGSA's approach to this sector is comprehensive, encompassing the undertaking of architectural and engineering studies; the execution of renovation and new building works; the energy adaptation of buildings and guidance and support in property acquisition and disposal tasks. The Group has also collaborated with the different Public Administrations in maintaining, preserving and restoring the Historic and Artistic Heritage of Spain in 900 municipalities, with actions relating to historic monuments such as the Patio de Comedias in Torralba, listed as a Cultural Interest Building in 2004; the Castle of Arévalo and the Church of San Francisco el Grande in Guadalajara, among others.

The Group seamlessly integrates technology applications and functional and aesthetic

aspects in all of this work and links the works to the natural and urban environment.

This ensures that the habitats we produce meet human needs in a sustainable and all-embracing manner. TRAGSA's portfolio of activities in the area of Building and Architecture is also targeted at urban management and planning, as well as at the execution of building projects for industrial, commercial and public use.

Although this is one of TRAGSA's most recent business units, we already boast extensive experience through such noteworthy activities as:



**1 |** The design and execution of the Police Headquarters in Paterna (Valencia), a unique building whose façade boasted special finishes and ostentatious cantilever structures.

**2 |** The execution of the Spanish Pavilion at the 2012 Floriade International Exhibition, held in Venlo, Holland. The building was inspired by sustainability and used recycled materials for its construction: wood from fruit boxes, planks and wood from construction work, remains from buildings and forest fires, rods and wattle used in horticultural facilities and in traditional building and vine shoots from vine and olive tree pruning.

**3 |** The design and execution of the Visitor's Centre in Ses Salines (Majorca), which included the construction of a traditional circular, Balearic talayot\* for which special foundations had to be built in flooded areas and special finishes had to be designed giving the assembly its unique appearance.

\* A Bronze Age megalith on the islands of Minorca and Majorca.

**4 |** Renovation of the Castle of Arévalo (Ávila), completed in several stages, which involved both lifting the foundations using the jet-grouting technique, as well as restoring walls and stone canvases.

**5 |** Renovation of the gardens and the greenhouse building of the Palace of Parcent in Madrid.





A unique building for oceanographic research:  
**the Oceanographic Centre of Tenerife**

The new Oceanographic Centre of the Canary Islands was inaugurated in 2011 in order to boost the capacity of the marine science community in the region and become a support tool for Spanish scientific policies and cooperation with Africa in sea- and marine environment-related matters.

TRAGSA was charged with building a sustainable, high energy-efficient building whose design was especially masterminded so that the passive elements of the building benefit as much as possible from natural light, predominant winds and other natural conditions of the environment.

The new building also recycles water, incorporates renewable energy sources and minimises power consumption and the generation of CO<sub>2</sub> and other waste. Technical foundation problems had to be overcome in the construction of the building which were solved using micro piles, as it was located on reclaimed land.

This work took three years and involved over 50 of TRAGSA's employees from the areas of architecture, technical architecture, civil and industrial engineers and agronomists.



**TRAGSA seamlessly incorporates technology applications, functional aspects and the linking of projects to the local environments**



In the Building and Architecture area, TRAGSA undertakes activities and has solutions for:

**Urban and spatial planning**

- | Projects in urban environments that are both consolidated and for development based on sustainability criteria, energy efficiency, passive use, etc.
- | Environmental and landscape projects.
- | Spatial planning.
- | Sustainable urban development.
- | Processing of housing- and building-related paperwork.

**Industrial and Commercial Premises and Warehouses**

- | Studies, projects and works for fish markets, logistics bases, markets, silos.
- | Recycling facilities and waste transfer and treatment plants.
- | Power plants.

**Social, cultural and office use. Public use and heritage. Performance and recreational use**

- Studies, projects and new buildings and renovation for:
- | Administrative and office buildings.
  - | Research centres, archives and schools.
  - | Environmental education centres.
  - | Performance and visitors centres.
  - | Nature classrooms, information points and civic centres in natural environments.



**Key facts**

- Experience:**  
25 years
- Employees:**  
1,200
- Activities:**  
3,500 over the last fifteen years
- Scope of Action:**  
National and International
- R&D&i:**  
2 projects in progress
- % of Activity:**  
13% (2012)



## Water

A track record spanning over thirty-five years makes the TRAGSA Group an international benchmark in the development of innovative and high-technology-level solutions for the integral management and control of the water cycle: from hydrological planning to the definition of water quality indicators. This extensive experience and our highly-qualified professional team enable the Group to successfully undertake any action meant to facilitate the access of the population to water resources for their urban, industrial and agricultural usage and the start-up of disposal and water treatment networks.

TRAGSA's water-related activities meet maximum quality standards and incorporate the protection of associated eco-systems in all processes. Over 1,200 people are engaged in managing water at TRAGSA, including civil engineers, architects, topographers, as well as specialists in the assembly of all manner of pipes for the provision of irrigation and water supply and disposal activities using plastic, metal and concrete materials.

The company has undertaken activities entailing the planning, design and construction of facilities and infrastructures for managing

surface and underground water and inter-related natural resources both in Spain and abroad, always applying in the most cutting-edge technologies in monitoring systems for water infrastructure, supply and disposal, irrigation and information systems, as well as for the management of water quality.

One of the activity fields in which TRAGSA boasts the most experience is irrigation. In fact, we took part in the implementation of the 2008 Horizon National Irrigation Plan in Spain for improving, consolidating and modernising 1,135,000 ha, as well as creating 242,800 ha of new irrigation, with an investment of EUR 5.024 billion; and in the 2008 Irrigation Modernisation Action Plan which led to the modernisation of 866,898 ha, with an investment of EUR 1.872,5 billion. These activities have led to savings of almost 1,162 H of water.

The Group has been responsible for executing over 170 works for modernising water infrastructure across Spanish territory. These actions, which involve an unquestionable social component, have allowed more than 290,000 irrigators to benefit from and improve both their living standards and the competitiveness of their agricultural farms, in

addition to achieving a saving in resources and more efficient use of this natural resource.

TRAGSA is also one of the leading companies in Spain in the construction of infrastructures for supplying, distributing, reusing and conserving water (pools, reservoirs, irrigation networks, pumping stations, etc.). The Group's commitment to innovation has resulted in the formation of the Spanish Water Technology Platform of which we are a founding member. This platform is a cooperation forum for conducting R&D&I on the sustainable management of water resources.

There are many examples of TRAGSA's successful work in the water area, including::



**1 |** The modernisation of irrigation infrastructures in the Communities of Irrigators of El Valle Inferior del Guadalquivir (Seville), of El Canal de Orellana (Badajoz), Vegas Altas III (Badajoz), of Albelda (Huesca), of the River Alhama (La Rioja), of Motril-Carchuna (Granada) and of Lasesa (Huesca).

**2 |** The taking of samples for classifying the ecological status of continental water masses.

**3 |** The preparation of the First Management Plan for over-exploited underground water resources.

**4 |** The installation of irrigation automation and monitoring systems applying cutting-edge technologies, which are comparable with those of the most advanced private companies in the most developed countries in this area (USA and Israel).

**5 |** The design and execution of infrastructure for treating, purifying and desalinating waters.





## An example of water-based rural transformation

In 1985, the Spanish government launched a national investment program to transform 65,000 hectares in Aragón (Spain) into irrigated land by taking advantage of the Monegros canal. This programme realised an ambition that dated back to the Alto Aragón Irrigation Plan of 1915. Work has been underway for almost 30 years to diversify the irrigable surfaces of the highest number of municipalities, to settle the population in their territory, to create permanent jobs and to lay the groundwork for the development of the area.

TRAGSA was commissioned to carry out the necessary actions for transforming and irrigating the aforementioned surface area. Road, waste pipe and drainage networks, regulation ponds, pumping stations and networks of pipes whose diameters range from 80 mm to 1,500 mm were created. These infrastructures take water to the plots of each of the recipients, ending in collection boxes which enable users to connect and automate their irrigation systems at their farms.

Coordinating fully with the Ministry of Agriculture, the Water Authorities of the Ebro and the Regional Ministry of the Government of Aragón, The Company created the road infrastructures (road, waste pipe and drain networks) and hydraulic infrastructures (regulation ponds, pumping stations, pipe networks) needed for the aforementioned transformation.

These works were carried out over 25 years, with a budget of over 500 million euros for irrigation infrastructures in the water basin of the River Ebro. This project involved the participation of over 200 of TRAGSA's employees every year, including agricultural engineers, agricultural technicians, public works technicians and works managers in different specialist areas.



TRAGSA's water area catalogue features solutions and activities for:

### Irrigation and drainage

- | Preparation of basic studies, draft projects and construction projects.
- | Planning and execution for transforming and modernising irrigation.
- | Design, execution, management and maintenance of collection infrastructures, channel regulation, irrigation systems, electrification and automation.

### Sewer disposal and treatment

- | Preparation of basic studies, draft projects and construction projects.
- | Construction and use of purification systems, disposal networks, collectors, storm tanks, desalination.
- | Planning of additional treatments for the reuse of treated water in irrigation.

### Water supply, purification and use

- | Preparation of basic studies, draft projects and construction projects for water intake, diversion and drinking water transportation works.
- | Construction of hydraulic engineering infrastructure for supplying water to townships.
- | Drafting and execution of projects for drinking water and desalination plants.
- | Control and monitoring of water supply quality.



### Key facts

#### Experience:

36 years

#### Employees:

an average of 1,200 per year

#### Activities:

1,200 (last three years)

#### Scope of Action:

National and International

#### R&D&i:

12 projects in progress

#### % of Activity:

13% (2012)

**TRAGSA is an international benchmark in developing innovative solutions for the integrated management and monitoring of the water cycle**



## Services, Agricultural Farming, Forestry and Fishery Production

The TRAGSA Group is specialised in different fields so it can offer a service that is comprehensive, efficient and committed to Government Agencies. To this end, we tailor our own resources, our highly qualified human capital and technology tools to each customer's specific needs.

The Group rounds off its portfolio of actions and services in this area with training, communication and environmental education activities; the use of agricultural, forest and fishery production, as well as the maintenance and management of waste treatment resources and services. The Group's experience and professionalism in this area can be clearly seen in the more than 400 actions we have undertaken in the last decade.



TRAGSA has not only treated and managed the 27,250 tons of waste produced in all the autonomous regions, but we also have experience in managing waste plants and landfills, such as the landfill of La Chureca, Managua, generating 500,000 tonnes per year, and the operation of the urban waste treatment centre in Hellín (Albacete) since 2011, generating some 48,000 tonnes per year.

The Company has designed a state-of-the-art traceability system that provides inspection and tracking services and develops, from the design stage, integral agricultural management systems. The Group has been collaborating with Government Agencies in improving and optimising agricultural, forest and fishery farms for over three decades.

Throughout this timeframe, we have implemented over 150 programmes for the management and promotion of agro-food industries; the conservation and improvement of agricultural production; the exploitation of game farms and the promotion of the export and import of agricultural products, as well as on the conservation and enhancement of livestock breeds.



In the area of Communication and Training, TRAGSA advises and supports the Administration in preparing publications and audio-visual media and in participating in trade fairs, conferences and seminars via the construction of stands and the coordination of technical and human support systems, volunteer management, etc. We also provide our customers with the material and equipment needed to create environment performance centres, such as the Visitor's Centre at Ses Salines (Majorca) and Telesforo Bravo in the Teide National Park (Tenerife).



TRAGSA has a team of 90 professionals who are specialised in managing and operating cooperation and oceanographic and fishing research vessels. Our more than 15 years of experience and the technology advancements implemented by TRAGSATEC in this field, enable us to manage and operate vessels for fishing and oceanographic research and to cooperate with institutions and public bodies in training personnel in the area of fishing, as well as in providing teachers and specialist scientists.

One of the Company's most noteworthy actions in this area was performed by Cytasa in Paraguay. Cytasa is tasked with managing

the 'Los Lapachos' estate, an example of a model of rural development adapted to the conditions of the environment. In addition to the agricultural exploitation of the estate, Cytasa has been responsible for undertaking activities for refurbishing and improving its infrastructure, housing, workshops and offices, as well as silos and seedbeds. Other jobs carried out include building a dyke for the water reservoir for the supply and irrigation systems; improving the existing road network and building 40 kilometres of roads; improving agricultural plots; manufacturing eight furnaces to produce charcoal using wood from the cleaning of the autochthonous forest and from afforestation; the purchase of cattle and afforestation.





## Research vessel operations

Since 2007, TRAGSA has been tasked with the integral management of the Spanish oceanographic vessel 'Miguel Oliver'. This ship has a length of 70 meters and a beam of 12 and is a multidisciplinary vessel outfitted with state-of-the-art technology for navigating, fishing and oceanographic research.

The 'Miguel Oliver', which is classified as an ecological and silent vessel, is fitted with acoustic systems designed to detect shoals of fish which can be configured so that they are adapted to the different fishing gears used. Furthermore, for oceanographic research, the ship features several laboratories for biological, geophysical and geological research.

TRAGSA's work ranges from contributing crew to managing and providing supplies, equipment, necessary insurance, etc. One of its other tasks is to guarantee the vessel's communications as well as to undertake representation and protocol, advertising and public relations activities. During the 2007-2013 period, the company assigned 64 people, 58 crew members plus 6 onshore technical staff.

The Group has also assigned a crew of 35 people to the vessel 'Sarmiento de Gamboa', pertaining to the Spanish National Research Council (Spanish acronym: CSIC), which carries out scientific research campaigns on global oceanic circulation, marine biodiversity, fishing resources and climate change in national and international waters. The Sarmiento de Gamboa is the first Spanish oceanographic vessel that can work with ROVs (Remote Operated Vehicles) at great depths and with AUVs (Autonomous Underwater Vehicles).





TRAGSA products in the area of Services, Agricultural, Fishing and Food Production and farms are:

**Training and Communication**

- | Environmental education and communications.
- | Preparation of publications and audio-visual materials.
- | Management of meetings, seminars, courses, educational activities, exhibitions, guides, security officers and volunteer coordination and management.

**Farms and agricultural, forest and fish production**

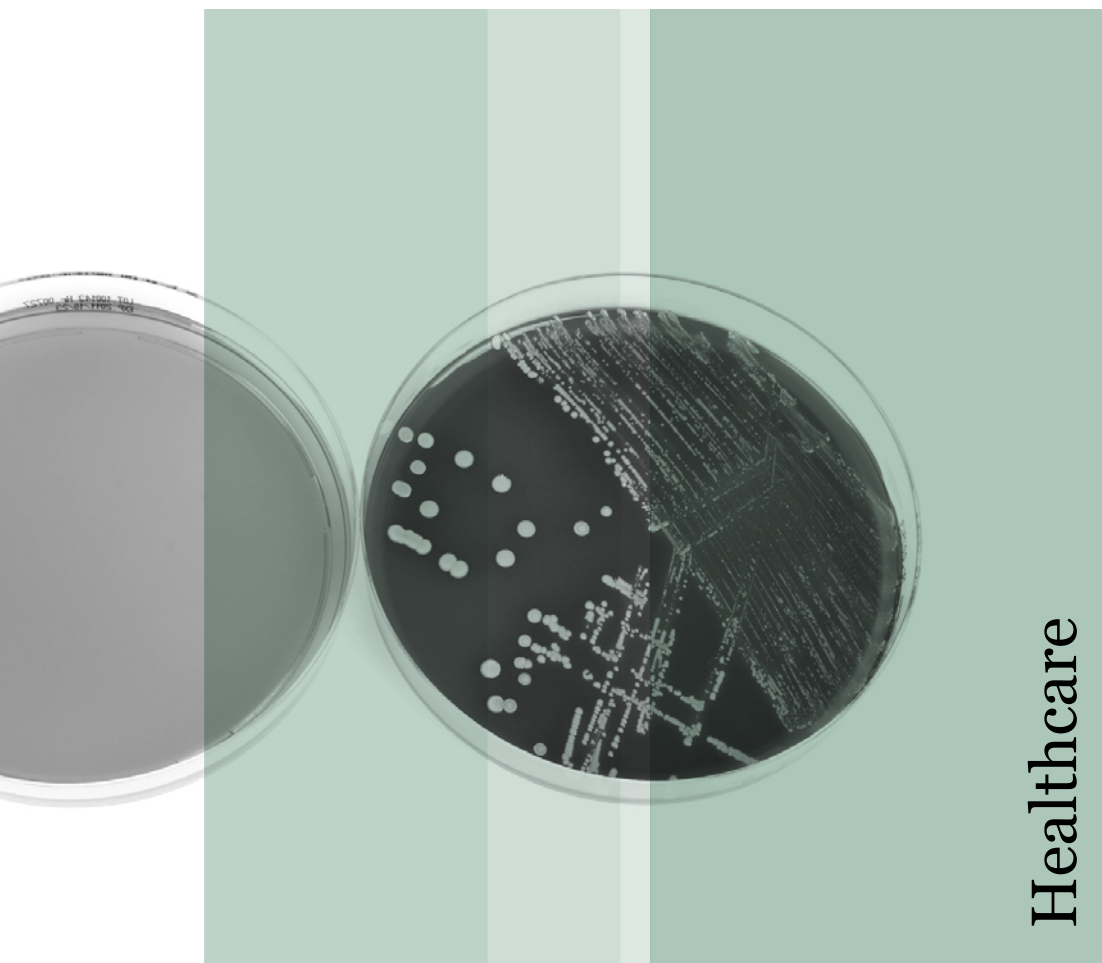
- | Specialised services for farms in the areas of compliance with stock regulations and availability of resources and means.
- | Development and promotion of these sectors.



**Management and maintenance**

- | Management and operating of vessels both for fish and oceanographic research and for cooperation in fishery training subjects.
- | Provision of scientific and teaching staff for running campaigns.
- | Maintenance of the operating process and coordination of plant nurseries, fish farms and waste plants owned by the Administration.
- | Management and collection of rubbish waste and landfills.

Key facts	<b>Experience:</b>	36 years
	<b>Employees:</b>	an average of 1,400 in recent years
	<b>Activities:</b>	an average of 250 per year
	<b>Scope of Action:</b>	National and International
	<b>R&amp;D&amp;i:</b>	5 projects in progress
	<b>% of Activity:</b>	3% (2012)



## Healthcare

TRAGSA manages and monitors the traceability of agricultural and livestock products from their source to consumer points of sale through systems that serve to strictly and permanently monitor food quality and safety. We have actively collaborated with different Government Agencies in overseeing health, people's wellbeing and in managing health services for the past three decades.

The Group's actions encompass public health, food safety and public, animal, forest and plant healthcare; areas in which TRAGSA has implemented 2,700 projects throughout its history, over 600 of which were carried out in the last two years.

We offer customers a comprehensive, rapid and efficient response in the area of healthcare thanks to a workforce of 1,300 professionals and to the application of state-of-the-art computer tools in the management of information, developed by the subsidiary TRAGSATEC.

The combination of both factors enables us to guarantee the strictest food safety and public health checks for its customers.



For the Group, food quality and safety are its main priority and specialist area. For 15 years, TRAGSA has approached the food chain with an integrated vision. It carries out audits and checks on animal, plant and food traceability in its official monitoring and certification programmes. The company gathers and analyses health and food data, assesses food risks and also takes charge of managing and notifying the aforementioned incidents in crisis situations.

The Group designs prevention plans and chemical, biological and environmental risk analyses. TRAGSA is a pioneer in the development of phytosanitary and animal surveillance networks, which allow the rapid management of health alerts, and in the treatment of forest diseases and plagues. A clear example is the DACUS NETWORK which is used to track and monitor olive fruit fly plagues.



The Group works in the detection, management and containment of potential plagues that may emerge in the areas of animal, forest and plant healthcare. To this end, we develop specific trapping and sampling systems that can be applied both on the national and on the international levels.

We also have extensive experience in assessing phytosanitary products and in designing and executing wildlife health surveillance plans in natural spaces, as well as in managing recovery centres. Over the last three decades, TRAGSA has carried out its activity in more than 350,000 hectares of Natural Parks.

We also offer integrated surveillance services on wildlife in natural spaces managed by the National Heritage Organisation (2011-2012) which entails conducting sanitary tests on the animals found in these areas in order to monitor their state of health, as well as to regulate the density of the population of the different species such as the wild boars in area of El Pardo in Madrid.

Our commitment to health also encompasses actions and programmes that foment and promote education in the area of health and nutrition, as well as in the prevention of obesity. Approximately 700 of the Group's employees have been linked to health training and monitoring programmes.





1 |

The cases successfully carried out by TRAGSA in the healthcare and health area include:

- 1 | The development of an information system that serves to oversee and monitor diseases and identify animal epidemic focal points. This program is applied in the TRACES systems, which are used to monitor intercommunity movement and the import of animals and products of animal origin. GESTILAB is another application for managing samples, results and reports from the National Healthcare and Animal Genetics Reference Laboratories, which fall under the umbrella of the Ministry of Agriculture, Food and the Environment.



1 |



2 |

- 2 | Within the framework of our R&D&I activity, the design and manufacture of traps for pigs and boars in order to monitor possible epidemics among this animal species. This innovative system has allowed a higher number of live, healthy specimens to be preserved.



2 |

**3 |** Technical Assistance to analyses infection by Pinewood Nematode (PWN) (*Bursaphelenchus xylophilus*) in the Sierra de Dios Padre (Caceres). Following the detection of PWN in the province of Caceres, measures were set up which included the destruction of woodland that was able to transmit the infection within a radius of 3 kilometres around the focal point of the infection; the design of a plant material sampling system to locate *Bursaphelenchus xylophilus*, according to a sampling mesh of 200 by 200 square meters; the on-site localisation of sampling points and the taking of samples. Each sample was formed of wood extracted using a two-centimetre diameter drill which was inserted into the trunk up to a depth of three centimetres. The samples were packaged, identified and suitably preserved. These measures were carried out over an area of 760 hectares of forestland in the Sierra de Dios Padre and the municipalities of Villanueva de la Sierra and Santa Cruz de Paniagua.



**4 |** The management of food monitoring and traceability systems in the case of Bovine Spongiform Encephalopathy (BSE), the Mad Cow Disease crisis. TRAGSA developed and managed the technology system and the database which enabled cattle food to be tracked from its origin to the consumer.



**TRAGSA designs prevention plans and chemical, biological and environmental risk analyses**



Integrated plague management of  
**the olive fruit fly**

One of the Group's most emblematic projects in this area is the olive fruit fly plague surveillance system. Since 1990, TRAGSA has continuously developed the design and launch of an alert system to track and monitor plagues in different crops (citrus fruits, vineyards, palm trees, cotton, beet and horticultural crops), as well as to monitor other animal diseases. One clear example is the Alert Network set up to track the olive fruit fly plague (*Bactrocera oleae*) which affects the quality of olive oil. The alert system designed by TRAGSA has been extremely useful for the Spanish olive oil sector, as it has enabled the levels of attack of this type of insect on olive trees to be monitored efficiently and economically, thus increasing the quality of the oil.

In addition, in 2006 TRAGSA built one of the three centres in the world for the production of sterile male fruit flies. The laboratory annually produces hundreds of millions of sterile fruit flies in order to counter the spread of this insect in both olive and citrus orchards.

Over the 22 years that the Group has been engaged in this activity, an average of 96 technicians (90 persons allocated to field work and 6 to office tasks) has been assigned every year. In addition to human resources, the Group has deployed 95 automatic agro meteorological stations.



Services implemented by TRAGSA in the area of Healthcare:

### Public Health

- | Protection, promotion and restoration of the health of the entire population through group actions and initiatives.
- | Development of strategies to foment education and promote health in the area of nutrition, obesity prevention and healthy lifestyle habits.
- | Risk prevention.

### Animal, forest and plant health

- | Sizing of networks for the rapid detection of plagues using state-of-the-art techniques (specific trapping systems and adaptation of sampling techniques).
- | Training of field inspectors.
- | Promotion of data management computer tools.
- | Assessment and border control.



### Food safety

- | Audits and checks in food traceability and in official control programmes.
- | Collection and analysis of health data.
- | Evaluation of food risk.
- | Management and communication of food risks and in crisis and emergency situations.
- | Assessment of sanitary products and other defence methods.



### Key facts

**Experience:**  
30 years

**Employees:**  
1,300

**Activities:**  
800 (last three years)

**Scope of Action:**  
National and International

**R&D&i:**  
8 projects in progress

**% of Activity:**  
5% (2012)



## Studies, Technical Support and Consulting Services



Through its subsidiary TRAGSATEC, the TRAGSA Group is a qualified advisor in consulting and the creation and implementation of advanced computer solutions for the integral management and monitoring of livestock and fish farms. We specialise in the design, development, implementation and maintenance of advanced Information Technologies (IT) systems, having successfully implemented over 1,200 projects in the last four years, 13 of them in the international arena.



Within this line of activity, the Group has spearheaded the modernisation of Government Agencies making e-Administration possible, which it has achieved through web platform projects and applications to create and manage databases, telematics systems and online citizen help lines.

TRAGSATEC has an extensive team of over 5,000 professionals, of which 46% hold honours degrees and 14% 3-year degrees. The capacity for innovation of the human team enables TRAGSATEC to remain at the forefront of the integral development of technology solutions that can be applied

in fields as varied as spatial planning; the management and systematisation of financing and subsidy applications and the development of inventories and social and environmental studies.

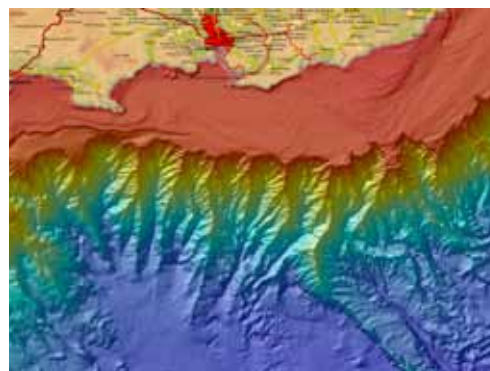
The Group has developed latest generation technology tools in the area of Geographical Information Systems that serve to incorporate territory observation pictures at different resolutions into databases that are unique owing to the amount and quality of their contents. Over the last 10 years, TRAGSATEC has processed at least a surface area of 25,000 Km<sup>2</sup> per annum and, on occasions; it has succeeded in processing the whole of national territory (506,000 Km<sup>2</sup>). The application of this state-of-the-art technology positions this subsidiary as a strategic provider in the implementation of Rural Development and Public Use and Territory Management Plans, which can be applied on both the national and on the international scale.

The company's activity as an advisor and technical consultant can also be applied to the development of air pollution prevention policies and the fight against climate change. In this respect, TRAGSATEC conducts

Environmental Impact assessment studies and creates and implements programmes, plans and projects related to identifying and assessing the reality of the territory, the socioeconomic environment and environmental laws and regulations.



## TRAGSATEC designs, develops, implements and maintains cutting-edge systems in the field of Information Technologies (IT)



The Group offers integral support to its customers in all Property Planning processes, in managing and monitoring through external and internal audits, as well as in managing and analysing information. In recent decades, we have conducted 50 technical audits and have managed, monitored and applied for European funds for regions in European aid.

TRAGSATEC is able to develop computer systems that are adapted to every need, organisation and administration. This versatility and innovation can be seen in many of the projects implemented, which is another aspect that has helped make the Group an international benchmark:



- 1 | Development of Geographical Information System (GIS)-based tools which serve to generate mapping contents, to implement remote sensing and photogrammetry systems, to manage geographic information servers and to develop online viewers on fixed and mobile devices in order to make updated territorial information available as well as to disseminate it for public use.

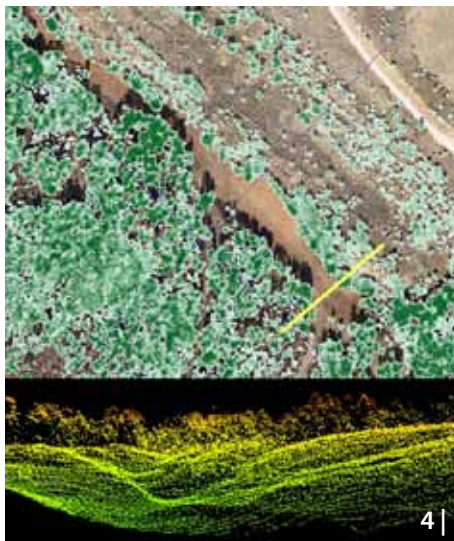
The main GIS technology application is the monitoring of financing and subsidies to the agricultural sector, an area in which TRAGSATEC, commissioned by MAGRAMA, has pioneered the development of the "Agricultural Plot Geographic Information System" tool (Spanish acronym: SIGPAC), the graphical reference database of the agricultural sector, both for farmers and for the Administrations in managing financing for agriculture.



- 2 | The launch and management of the User Service Centres (Spanish acronym: CAU) of the Ministry of Justice, of the Public Prosecutor and of the National Court of Spain.



- 3 | Cataloguing and management of the archives of the National Film Library, a tool that has successfully computerised administrative procedures and has been used to catalogue 45,000 film titles and 20,000 titles of the NO-DO documentary archive.
- 4 | Use of LIDAR technology: permits the capture of three-dimensional information on the territory with high density and precision. This technology is used in projects related to activities in the territory to generate mapping through the classification of structural elements and spatial planning, civil engineering, environmental risk assessment and land use.
- 5 | The development of a system for the management of On-board Electronic Logs (Spanish acronym: DEA) and a communications centre for fishing fleet activity, which has required the use of satellite communications and interoperability and safety standards. This project also included the integration of the fishing information of the member states of the EU and of third countries.



## Proceedings of the National Court of Spain, planned for 2014. Electronic Court Records System (Spanish acronym: EJE) in the Labour Chamber and in the central courts for Contentious-Administrative proceedings of the National Court of Spain

The Electronic Court Records System makes it easier for parties involved in legal proceedings to manage and access the dossiers which the Ministry of Justice has stored in digital format. Its implementation totally eliminates paper in court processes, which streamlines the processing of procedures and guarantees the security of the process.

TRAGSA's task consisted of analysing, designing, developing and implementing this system for the Labour Chamber and the Contentious-Administrative courts of the National Court of Spain. The implementation, in two stages, was completed in February 2012, following the digitalisation of over 1,500,000 documents.

In order to implement the Electronic Court Records System, the TRAGSA Group actively participated in the launch of a corporate document manager. A document map had to be prepared to standardise all the types of legal documents, assigning metadata which will facilitate their integration in the different legal bodies.

The Group is still working on the aforementioned system by developing and implementing an administrative dossiers loader, which enables documentation to be sent and received electronically from different bodies, in accordance with national interoperability and safety arrangements (Spanish acronyms: ENI and ENS). In addition, in 2013, work was begun which will allow this system to be extended to the Chamber for Contentious-Administrative proceedings.

In the area of Advisory and Consulting services, TRAGSA provides the following services:

### Information Technologies

- | Design, development, implementation and maintenance of computer management systems.
- | Design, implementation and maintenance of Government Agency data bases.
- | Geographic Information Systems (GIS): mapping and content generation, remote sensing and photogrammetry systems, geographic information server management and development of online viewers on fixed and mobile devices to make updated territorial information available as well as its dissemination for public use.
- | Use of telecommunication networks for telemetry systems and for equipment coordination.
- | Assistance and alert systems.



### Agro-livestock and maritime fishery services

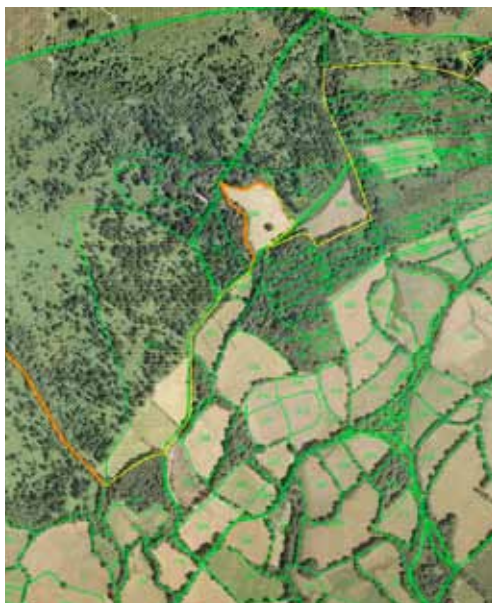
- | Integrated support for managing and monitoring all kinds of financing.
- | Support during external and internal audits.
- | Information use.
- | Analysis, specification and computer developments adapted to each organisation.
- | Monitoring of financing through subsidy and financing technical and economic audits.

### Social and environmental services

- | Activities geared towards creating awareness of and valuing the reality of territories, the socioeconomic environment, environmental laws and regulations and assessment in environmental terms of programs, plans and projects.
- | Rural development plans.
- | Management of land for public use.
- | Drafting of spatial planning projects: consolidation of fragmented plots and linear infrastructures.
- | Enforcement of air pollution prevention policies and the fight against climate change.
- | Collection of information on the environment needed for decision-making and making it available to the general public.

### Property planning

- | Activities geared towards knowing, identifying, valuing and managing property.
- | Inventories, censuses, demarcation, expropriation, public domain, consolidation of fragmented plots.
- | Valuations, appraisals, economic and legal studies.



### Key facts

**Experience:**  
25 years

**Employees:**  
An average of 1,000 in recent years

**Activities:**  
An average of 1,100 per year

**Scope of Action:**  
National and International

**R&D&i:**  
12 projects in progress

**% of the Activity:**  
11% (2012)



## Emergency Services

The management of natural emergencies and catastrophes is a critical area of action that requires the intervention of companies not only with extensive experience in this field but also with sufficient, qualified personnel outfitted with the tools needed to act swiftly and efficiently when faced with any emergency situation.

Any emergency situation may result in a crisis with a high social, environmental and economic cost and also in impairment of the image of the affected Administrations. Aware of the importance of their management, TRAGSA's response in these situations is based on three cornerstones: a highly-qualified professional team, a considerable logistics capacity for the rapid deployment of teams on site and the use of cutting-edge technology.

The TRAGSA Group boasts a response team that is specialised in emergencies and has over 20 years' experience in managing all kinds of environmental disasters: fires, earthquakes, aquifer contamination, etc. In all emergencies, the company fully cooperates with the national and regional institutions involved, as well as with other collaborating entities.

The Group employs a total of 2,000 specialised professionals trained in emergency tasks which are mobilised depending on the scope of the emergency. These crews are permanently coordinated through TRAGSA's territorial units, which increases their action radius and reduces their response time.

The Group also has a training and coaching programme which includes the periodic staging of simulations in order to guarantee the updating of the knowledge of the personnel assigned to this area, as well as their physical performance and emotional readiness to ensure the best response when faced with unforeseen risk situations.

TRAGSA's specialised emergency training program entails more than 100 courses per year, which have been attended by more than 30,000 people over the last 10 years. These programs cover both our own crews as well as personnel belonging to other Government Agency services.

The Group also boasts latest-generation technical equipment for the management of floods, snow storms, earthquakes and other extreme climate events, as well as the

prevention, monitoring and management of spillages and toxic emissions and other biological and sanitary alerts.

Another of the aspects that makes TRAGSA stand out in the area of emergencies is the importance it affords to research and technology innovation. The Group has designed and developed its own computer and digital simulation tools for their management. A clear example of this progress is the EMERCARTO application based on Geographical Information Systems technology (GIS) which serves to monitor and optimise resources for the management of emergencies via GPS/GPRS techniques and equipment and satellite in order to coordinate the teams at the scene of an emergency perfectly and to predict its evolution. This application is being used in Spain and, on the international level, in Lebanon.

TRAGSA also implements technology developments that use augmented reality, drones, fire simulators, natural disaster damage assessment systems, special vehicles designed to offer solutions for advanced command posts (ACP) and vans with a satellite connection (FURGOSAT).

TRAGSA's management in emergency situations also includes actions subsequent to the most critical times in order to restore and recover the damage produced. It also encompasses the planning of possible risk scenarios based on studies of similar situations.

Thanks to its proven, successful track record in managing emergencies, the TRAGSA Group takes part in the Community Mechanism for Civil Protection and renders assistance in Spain to projects run by the Directorate General of Civil Protection, ADIF, Local Fire Services and the Military Emergency Unit, the Nuclear Safety Council, the Security Forces and the Red Cross, in addition to participating in numerous international actions and cooperation projects.

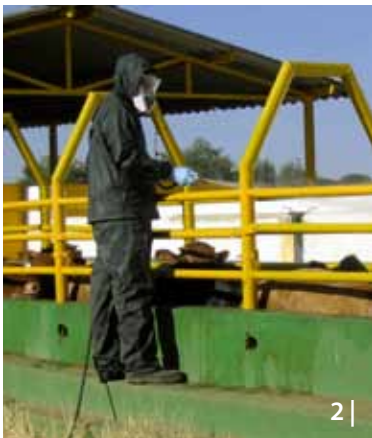




1 |

In its more than twenty years' experience in managing emergencies, there are many examples of our action in this area:

- 1 | Human and material deployment to confront the cleaning and recovery tasks of the Galician coastline, following the catastrophe resulting from the breakage and sinking of the Prestige oil tanker. This action also involved the coordination of thousands of volunteers who went to the area to take part in the cleaning tasks.
- 2 | The launch and execution of a strategy to check the "Mad Cow Disease" animal sanitary alert.
- 3 | Deployment for the containment and cleaning tasks of the spillages produced as a consequence of the failure of the decanting pool of a mine in Aznalcollar in the vicinity of the Doñana National Park.



2 |



## Fight against bird flu

In 2009, a highly pathogenic outbreak of bird flu occurred in "Granjas Segura S.A.", a chicken farm located in the municipality of Almoguera (Guadalajara, Spain).

TRAGSA was commissioned by the Regional Government of Castilla-La Mancha to undertake all the tasks needed to manage, monitor and eradicate the focal point. To this end, the Group placed at the disposal of the Regional Government of Castilla-La Mancha more than 100 operatives who were tasked with the sanitary slaughter of all the birds on the farm by using CO<sub>2</sub>-based slaughter systems, as well as the burial of the cadavers and by-products on the farm itself.



TRAGSA's areas of action in emergency management:

- | Design and development of integrated emergency, evacuation and civil protection plans.
- | Deployment of material and/or human resources needed to respond immediately to situations of imminent danger or resulting damage that are likely to cause social alarm or threaten the environment and/or the population.
- | Forest fires.
- | Climate or geological emergencies (floods, snow storms, droughts, earthquakes).
- | Sanitary alerts (animal diseases and plagues, epidemics, epizootic diseases, animal mortality management, etc...).
- | Spillages and toxic emissions.



## Key facts

### Experience:

36 years

### Employees:

80 Emergency Coordination specialists

### Activities:

An average of 300 in the past year (emergencies). Of the Group's overall workforce, 10% are trained and available for any catastrophe

### Scope of Action:

National and International

### R&D&i:

7 projects in progress

### % of Activity:

2% (2012). \* Relating to those that are processed by the administration



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