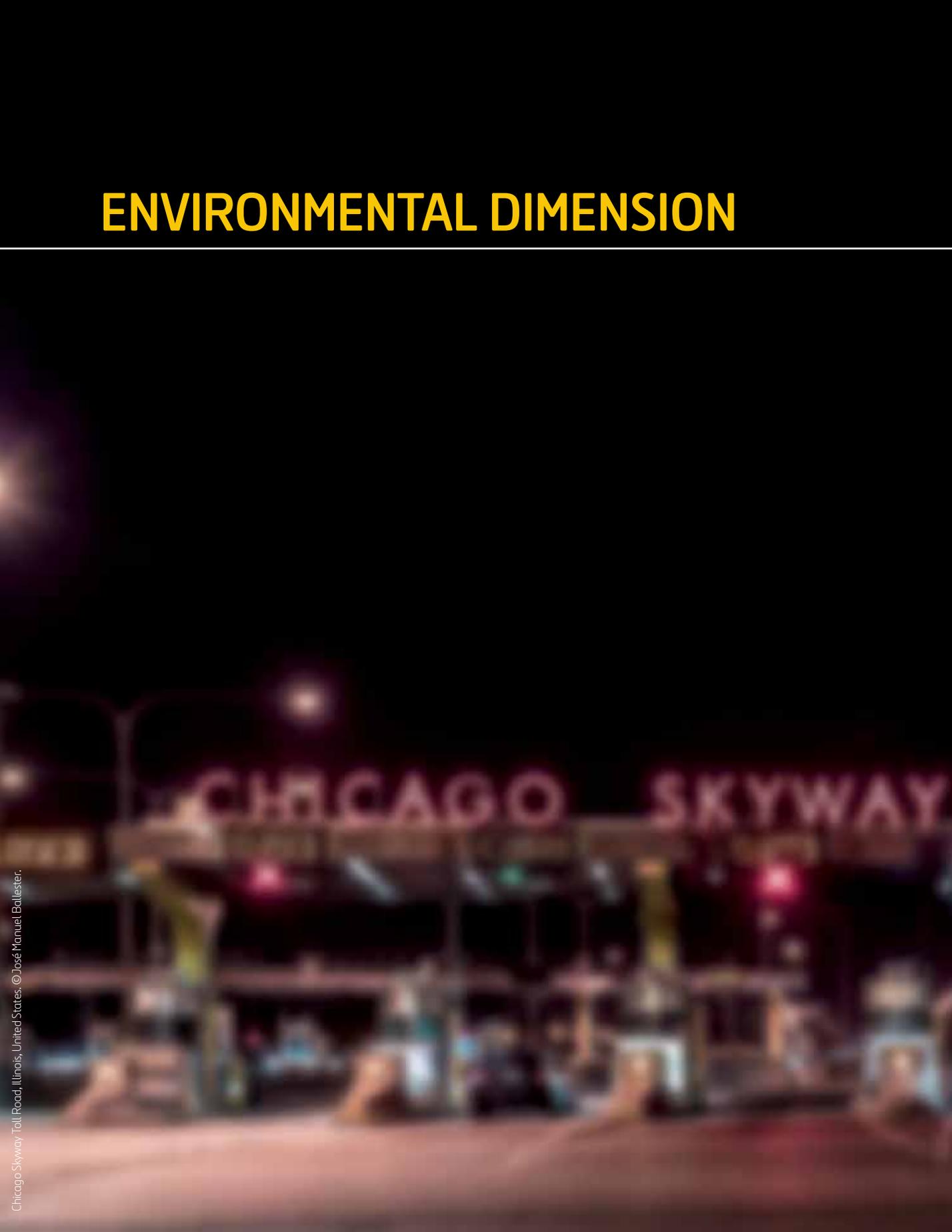
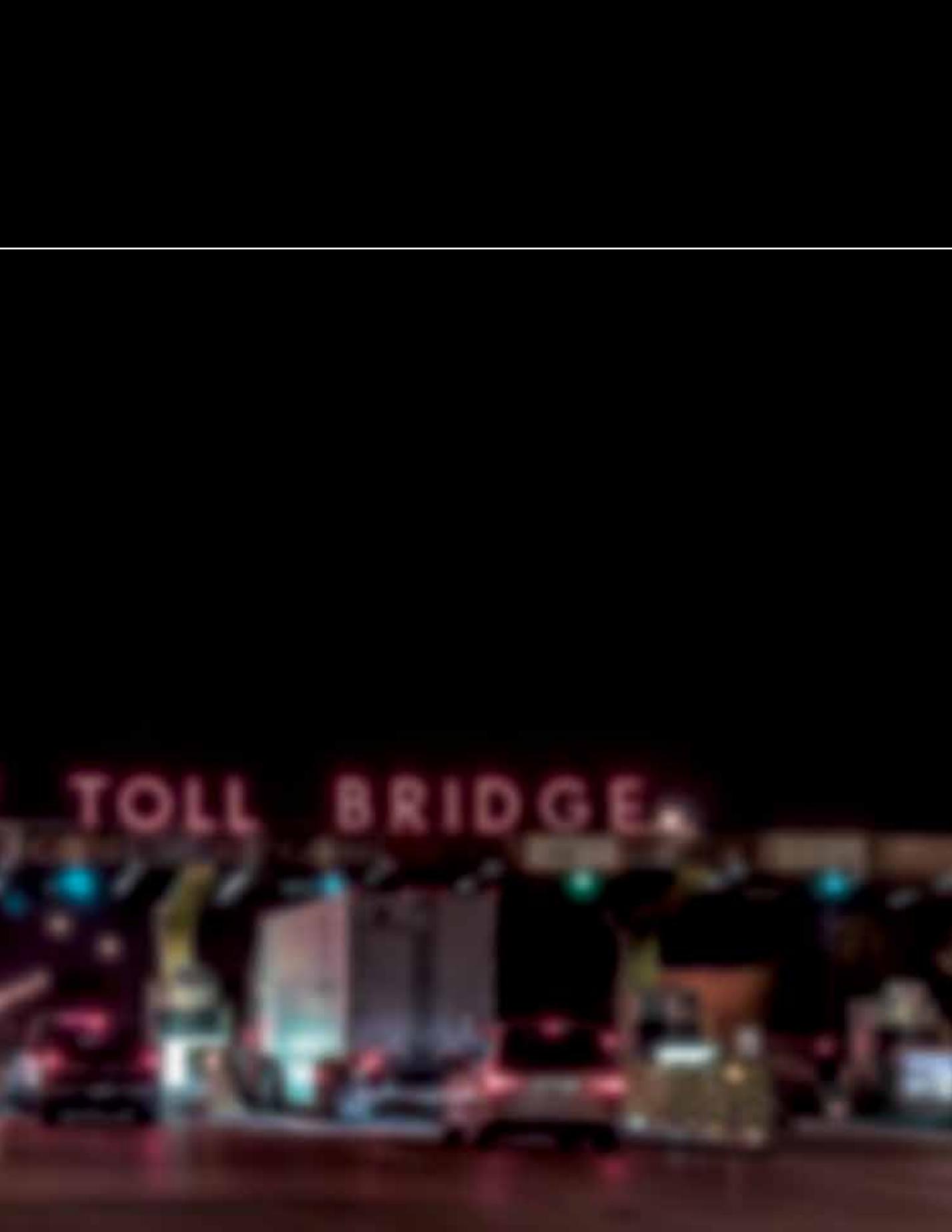


# ENVIRONMENTAL DIMENSION



TOLL BRIDGE.

A blurry, low-angle night photograph of a toll bridge. The scene is illuminated by various lights, including blue and green lights from the bridge's structure and red taillights from cars. A prominent sign in the upper center of the image reads "TOLL BRIDGE." in white, capital letters. The background is dark, and the overall image has a soft, out-of-focus quality.

# ENVIRONMENT

## Introduction

### Policy

#### Approach to environmental sustainability

Ferrovial is committed to reducing the environmental impact of its activities, taking a preventive approach that will benefit the environment and reduce the company's global carbon footprint. This commitment is embodied in one of the principles making up the "ground rules" that all decision-makers at Ferrovial and its subsidiaries around the world must abide by<sup>1</sup>:

- To satisfy client and user expectations.
- Everyone participates.
- Mutual benefit in relations with suppliers and partners.
- Eco-efficiency and reduction of greenhouse gas emissions.
- The value of commitment.
- Continuous improvement.
- Intelligent dialog with stakeholders, in particular with governments and regulators.

The full text of the company's quality and environment policies, as well as amendments to the principles, can be found on the Quality and Environment section of Ferrovial's website.

#### Strategy

Over recent years, analysts have highlighted Ferrovial as a leader in its sectors of activity, and in the area of environmental responsibility and sustainability. In fact, these aspects have taken on an increasingly important role and the company wants to use them as a platform for generating new ideas and models for business in a context of global environmental crisis. In recent years Ferrovial has bolstered its capacity to provide services and infras-

tructures that address global challenges such as climate change, the energy crisis and loss of biodiversity, with the aim of creating long-term value.

This approach to environmental sustainability has been deployed in a strategy with two basic objectives:

1. Responsible management of the environmental impact produced by its activities, from an eminently preventive perspective.
2. The use of Ferrovial's capacity and know-how in the development of infrastructures and services for a low-emission economy.

1. These principles, together with the rest of the sustainability policy, are currently under review. The update will be published on the Ferrovial website ([www.ferrovial.com](http://www.ferrovial.com)) in the coming months, once the process of preparation and internal approval is complete.

## Deployment of Ferrovial's environmental sustainability policy



Efficient use of energy and natural resources, coupled with a reduction of emissions and waste dumping, are a priority in production centers, but also a source of innovation and development of solutions that Ferrovial can then offer its clients and users; in particular, energy efficiency in buildings, the integrated management of cities (*SmartCities*) and low-emission mobility. Conservation of biodiversity is also considered a priority line of action, supported by the improved state of scientific and technical knowledge.

## Objectives and milestones in 2013

Below is a look at how far Ferrovial complied with environmental targets set for 2013, as well as the new targets for 2014, set within the context of the 2020 roadmap.

### Climate strategy:

- In 2013 Ferrovial successfully managed to keep on track with the roadmap to cut greenhouse gas emissions from Ferrovial activities by 21.3% by 2020. The reduction of greenhouse gas emissions in 2013 was higher than initial estimates, at 31.7% on 2009 levels, in relative terms.
- Not counting the temporary effect of the crisis in Spain, which has directly affected diffuse emissions from waste treatment and other activities, emission reductions are on track to comply with the 2020 target, at over 28%.

### Management systems:

- A new corporate platform to calculate and monitor the carbon footprint was set up in 2013. It will optimize calculations and offer more reliability, traceability and transparency in the data on emissions and fuel consumption.
- A study and analysis of the organization's climate and environmental risks was also completed as part of the corporate management tool (FRM, *Ferrovial Risk Management*). These risks will be monitored periodically in the future.

### Biodiversity and Natural Capital:

- An analysis of biodiversity markets was completed in 2013 within the scope of the "Ferrovial, Natural Capital" program. In addition, at the start of 2014 a collaboration agreement was concluded with the Massachusetts Institute of Technology (MIT) through the "L-Lab" program, which has enabled Ferrovial to align these mechanisms better with the company's overall activities and capacities.

### Ratings:

- In 2013 Ferrovial improved its position in the main SRI (*Socially Responsible Investment*) ratings. In particular, it remains the only company of Spanish origin in its sector in the *Dow Jones Sustainability Index*.
- Ferrovial has also considerably improved its score in the Carbon Disclosure Project (CDP), achieving 99 out of 100 in 2013 (9 points more than in 2012) and earning top ranking in its sectors globally.

### Business management:

- Significant progress was achieved in 2013 in a pilot project for energy rehabilitation and urban renewal across Spain. In 2013 an agreement was reached with the European Climate Foundation, as well as the municipal housing companies in Madrid and Zaragoza, to carry out a project that would affect more than 2,800 homes in both cities. Work has not yet begun.
- As part of the "Ferrovial, Capital Natural" program begun in 2012, significant steps forward were taken last year to develop the *SmartForest* model, in partnership with the *Forest Stewardship Council* (FSC). The first biomass facilities were started up in Catalonia (Spain).

## Medium and long-term objectives (2014–2020)

### Climate change:

- The main medium-term goal has focused on the reduction of carbon footprint intensity globally by 21.3% on 2009 levels. Both the level of compliance and the trend line are reported each year. A medium-term goal has been established to cut emissions by 20.2% by 2016 in the terms explained above.

### Eco-efficiency:

- Development of a verified method to calculate the water footprint has been proposed, with the aim of achieving global coverage of 100% by 2016.
- As for eco-efficient mobility, the company has decided to implement Mobility Plans in all Ferrovial's head offices and its subsidiaries by 2016.

### Biodiversity and Natural Capital:

- By 2016 Ferrovial aims for 100% of Construction and Toll Road sales to be subject to a quantitative assessment of their impact on natural capital.

## Environmental management

### Management systems

The business areas have implemented management systems that exceed ISO 14001 and EMAS standards, designed to control on-site impacts by using a preventative approach. Ferrovial has been a pioneer in environmental risk analysis and risk management systems, and it has adapted early to the demands of the current European Environmental Liability Directive.

All the management systems are based on the capacity to generate information that will be relevant to decision-making, both in terms of production processes and at executive and governing body levels. "Useful and relevant information" means any information complies with the following:

- It is based on quantitative data on the intensity of environmental impacts or risks, which is gathered as close as possible to the processes that originate such impacts or risks.
- It is associated with key processes, i.e. relevant environmental risks for the company.
- It is reliable and can easily be transmitted to higher levels of the organization through integrated indicators.

In all instances, the systems and information flows will be supported by IT systems, which may vary in complexity, providing coverage to all documents, procedures and records deemed crucial to meeting targets.

## Environmental risk management

There are specific procedures in place in all construction and services divisions to manage environmental risks, aimed at identifying and evaluating the chief risks, as well as managing, mitigating and controlling them.

Ferrovial has been a pioneer in implementing such procedures. It adopted them several years before they become legal requirements, in Spain basically as Law 26/2007 on Environmental Liability, Royal Decree 2090/2008 that partially implements this Law and that requires environmental risk analysis for certain activities, as well as Order ARM/1783/2011, dated 22 June 2011, which establishes the schedule for such obligations to take effect (these regulations are currently under review).

Likewise, under the EU Environmental Liability Directive, Member States may demand financial guarantees from operators to cover environmental risks. Since 2007 Ferrovial has also held an insurance policy that covers such risks under the terms established by European regulations.

The company ensures that this policy and coverage is fully up to date and appropriate to current risk levels.

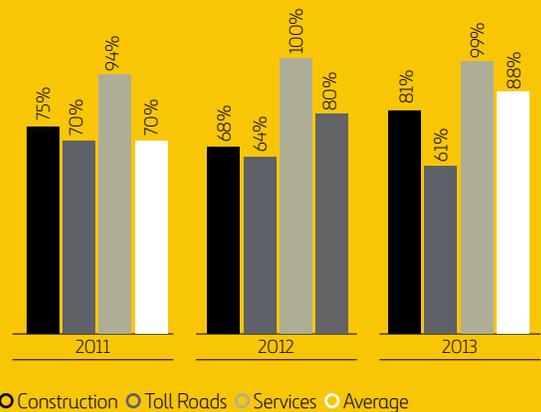
## Environmental certification

When so required or deemed valuable by third parties (governments, clients and other stakeholders), management systems shall be subject to accredited certification, based on the leading international standards (ISO, EMAS).

The scope of certification in each company's system and in the group as a whole is evaluated through the "percentage of certified sales" indicator. This ratio only includes activities that fall under the scope of the corresponding environmental management certificates, based on net revenues.

In 2013, the average percentage of environment-certified activity increased by seven percentage points on the previous year, to 88%. Details of the certifications by division can be found in the chapter on quality.

Percentage of certified activities (ISO 14001)



## Other certifications

In 2013 Ferrovial carried out an external audit of its greenhouse gas emissions, under the ISAE 3000 standard. The audit covers all divisions and includes both direct and indirect emissions established under Scopes 1, 2 and 3. The company also verified that its internal “Carbon Footprint Calculation and Reporting” procedure complied with international ISO 14064-1 standard.

## Relations with stakeholders

Ferrovial has fluid relations with key stakeholders, meaning those who are, or could be, affected by the company’s main environmental risks across the globe, those with regulatory influence, or those who may exert some influence over developing new business opportunities in the field of environmental sustainability. Analysis is conducted on these stakeholders as a whole, thus prioritizing relations with them and allocating the resources required to sustain fluent and two-way communication in the context of intelligent dialog.

Particularly important are relations with analysts and investors specializing in Socially Responsible Investment (SRI), spokespersons from civil society (mainly NGOs and labor unions), governments and regulators, as well as local communities. The most appropriate channels of communication are established for each of these groups, ranging from Ferrovial’s environmental microsite (<http://www.ferrovial.com/es/Calidad-y-Medio-Ambiente>) to personal interaction, and including medium and long term collaboration agreements.

In the particular case of NGOs and other representatives from civil society, Ferrovial tries to find projects of common interest with some of the most important organizations dedicated to conservation, such as the World Wildlife Fund (WWF) and Forest Stewardship Council (FSC). Ferrovial has been a member of the FSC, which is supported by environmental groups worldwide, since 2012. It also carries out relevant projects of common interest with SEO-Birdlife. In addition, the company works closely with institutions linked to government. This is the case with its long-term collaboration with the Biodiversity Foundation of the Department of the Environment, within the scope of the Agreement for the Global Change Monitoring Network, where the Spanish Climate Change Office, the Meteorological Agency and the National Parks body also participate.

The anticipation of regulatory trends, based on a close and mutually beneficial relationship with legislators and regulators, is considered an effective means of managing the impact of future regulation on Ferrovial's activities. As a result, the company is very proactive in its regulatory and legislative processes that may affect its activities around the world, contributing its experience and technical knowledge on matters that are the object of regulation. Expert personnel from various Ferrovial divisions meet regularly with officials responsible for regulations that could affect the company's operations worldwide, based on a relationship of collaboration and mutual trust. When regulatory amendments are far reaching, specific working groups are convened that feature representatives from all potentially affected business areas and subsidiaries. These groups carry out careful monitoring and seek to anticipate the effects of new regulations. Structured *lobbying* is also conducted at international level, always pursuant to the regulations governing such activities. Occasionally agreements may be struck with other companies or industries that share common interests (this was the case of the recent European Energy Efficiency Directive, approved in 2012).

Ferrovial also has a growing influence in the development of policies and strategies of broader scope. An example of this is that in 2013 a representative of Ferrovial was appointed to the *Green Growth Group*, a body where the representatives of civil society, academia and the business world advise the European Commission on the future of the economic and environmental agenda for the 2030 and 2050 horizon.

Likewise, Ferrovial strives to maintain fluid and highly proactive relations with analysts and investors, anticipating their needs and responding to key sustainable development issues on the global agenda. This relationship has been firmly consolidated in the last decade. It has made Ferrovial a model in the main sustainability ratings (DJSI, *Carbon Disclosure Project*, etc.) and in the main SRI portfolios.

## Environmental administrative disciplinary proceedings

In 2013, a total of € 10,987.5 was paid in environmental penalties resolved during the year. Ferrovial reports the effective sanctions for 2013 as well as for previous years, given that legal processes involved often take longer than a year. Consequently, the figures do not include proposed amounts, but only those penalties that were executed in 2013.

### Case study

#### Ferrovial - World Environment Day

This year, Ferrovial and the Spanish Ornithological Society (SEO) has for the first time celebrated World Environment Day by inviting employees and their families to participate in activities across Spain. The aim was to know on the ground the natural legacy of Spain and raise awareness of the importance of its conservation.

This pilot project was carried out in five natural spaces: Parque Regional del Sureste; the bird reserve in the Casa de Campo in Madrid; in the third most important wetland area for biodiversity in Spain, La Albufera in Valencia; the Doñana National Park in Huelva; and the stretch of the Llobregat river on its passage through the town of Abrera in the province of Barcelona.

Through guided visits with specialized monitors, employees and their families had the chance to get to know more about these natural spaces and the fauna that inhabits them, and to watch some species in their natural habitat, take part in conservation work, construct nests and ring birds.

The day was very successful and the company plans to repeat the activity at a future date.

The amount of the effective sanctions paid is maintained in line with last year, as are the number of penalties, regardless of their amount or nature (30 in 2013 compared with 25 in 2012).

There were no significant accidental spills in 2013. An event is considered to be significant when there are disciplinary proceedings resulting from it. In 2013 two proceedings corresponding to impact and authorization of occupation of the public water domain were identified.

The biggest penalties proposed are those referring to authorization for deposits and quarrying.

## Climate strategy

Ferrovial's activities are closely associated with some of the main man-made sources of carbon emissions. Globally, passenger transport generates around 25% of total emissions and has also been the fastest growing source of emissions over the last two decades. Should the current trend remain unchecked, it is estimated that the various modes of transport (land, air and sea) will emit 9.2 gigatons of CO<sub>2</sub> by 2030. Cities and buildings consume nearly 70% of energy and generate more than 30% of global greenhouse gases. Progressive "global urbanization" appears unstoppable. It is calculated that by 2050 70% of the world's population will live in cities, which will undoubtedly aggravate the problem of carbon emissions, pollution and insufficient energy resources for the megacities of the future.

As a developer, operator and administrator of transport and city infrastructure, Ferrovial is aware of its responsibilities and the importance of its public commitments with regards to climate change. But it also understands that the major challenges that society will have to address over the next few decades require innovative and complex solutions. Ferrovial has the capacity, knowledge and technology to put such solutions into practice, and open the door to new business opportunities.

## The regulatory environment

Although in 2013 uncertainty has remained about the post-Kyoto era at a global scale, the European Union maintains a commitment to leadership in the area of mitigation of climate change and reduction of emissions. The last Conference of the Parties held in Warsaw in November 2013 saw as its main challenge to make progress toward a major agreement to reduce greenhouse-gas emissions based on the Doha agreements. It was held in a context of skepticism. Even so, agreements were reached, particularly in the area of deforestation, which can serve as the basis for future progress.

### Environmental Penalties



Accumulated penalties corresponding to each year 2002-2011  
Penalties paid corresponding to cases initiated in the year and regularization of cases from previous years

Meanwhile, the last report from the Intergovernmental Panel for Climate Change (IPCC) confirmed the worst expectations with respect to the impact expected at planetary level, and stressed that we are running out of time for reaching agreements to reduce emissions.

Ferrovial's position is firm: it calls for a binding and global agreement is urgently required to establish a roadmap for the forthcoming years, with sufficiently ambitious targets with the certainty to support long-term investment and the development of low-emission technologies, services and infrastructure.

On the positive side, Europe maintains an ambitious commitment to the economic and environmental agenda in the upcoming years. There is now certainty that the 2020 targets will be met with ease, and an initial agreement has been reached to reduce greenhouse gas emissions by 40% on the 1990 figure. Ferrovial considers that this ambition can boost important markets for the company, such as energy efficiency, attract long-term investment and promote innovation in industry and services across the European Union.

## Case study

### ***Adapta Plan***

One of the priorities of the Spanish Office for Climate Change (OECC), within the framework of its Third Working Program, is to encourage the incorporation of adaptation to climate change into the Spanish business sector. This integration has two aspects. First, there is the work aimed at analyzing, evaluating and acting to reduce the vulnerability to the expected impacts of climate change. Second, this adaptation can also be seen as an opportunity for some Spanish business sectors, which can develop strategies as suppliers of professional services in this respect.

Ferrovial was chosen by the Spanish Climate Change Office (OECC) within the Adapta Plan for a pilot project on the development of a methodology to analyze the vulnerability of one of its infrastructures to the impact of climate change. The aim was to introduce the adaptation to climate change into the business strategy and raise awareness of the importance of its implementation. Specifically, the pilot project was focused on a Cadagua water treatment plant. It aimed to extract conclusions and experiences that could later be shared with representatives of each sector. The project will give the opportunity to the private sector to play a pioneering role at international level, laying the technical groundwork and providing experiences for sharing in transport, energy, agricultural transformation, water activities, insurance and health projects, where integration of adaptation to climate change can be an essential competitive advantage.

This study was presented recently by the OECC and will be available on Ferrovial's website in the Quality and Environment section. Based on information provided by the company and existing literature, the report analyzes the challenges and opportunities faced by this sector. It carries out a more detailed analysis on the vulnerability to climate change of Ferrovial's activity, focused on a desalination plant located in Alicante.

## Carbon Footprint management

Ferrovial cannot be credible as a potential low-emission infrastructure and service provider if it is not prepared to make ambitious commitments to reduce its own carbon footprint. Ferrovial has since 2009 measured 100% of greenhouse gas emissions from its global activities, with the aim of reducing its carbon footprint, mainly through more efficient energy use. Targets have been set at a global scale for the 2020 horizon, with a *bottom-up* approach that integrates opportunities or reducing emissions based on production processes; in other words, based on the productive processes in each business area, where the “pockets of opportunity” were identified and assessed for reducing emissions.

As a result of this process, Ferrovial has set a target of a 21.3% reduction in emissions by 2020 with respect to the base year 2009, in terms of carbon intensity. This target involves 100% of the activities, companies and subsidiaries at a global scale. To meet this commitment, Ferrovial has developed and implemented actions to reduce emissions, both specific in each business area and in general:

- Inclusion of energy efficiency criteria in purchasing and service subcontracting; purchase of electricity from certified renewable sources; use of alternative fuels; and more alternative vehicles.
- The Sustainable Mobility Plan for Ferrovial employees was introduced in 2008 and has progressively been extended to the group’s main corporate offices. It represents a pioneering initiative in the business world. As part of these plans, initiatives have been included to upgrade vehicle fleets and provide training in efficient driving practices (particularly in Construction and Services).
- The development of technology and processes aimed at improving the amount of emissions avoided.
- Incorporation of energy efficiency measures in buildings used by corporate headquarters.

One striking example is Ferrovial’s head offices in Príncipe de Vergara, Madrid, where electricity consumption has been cut by 52.54% against the 2008 figure thanks to energy efficiency upgrades, temperature adjustments and air conditioning timetables implemented over the last year in the building. As a result of this exercise, 8% less electricity was used than in the previous year.

- Progress has been made in the certification of the activities provided by the integrated maintenance and energy efficiency services and waste management in energy efficiency management systems. This is the case of Ferrovial Servicios, which has its system certified according to ISO 50001 requirements. These systems ensure energy efficiency at both the facilities and buildings owned by Ferrovial and by third parties, including power supply and generation, the management and design of facilities, and processes associated with greater energy efficiency.

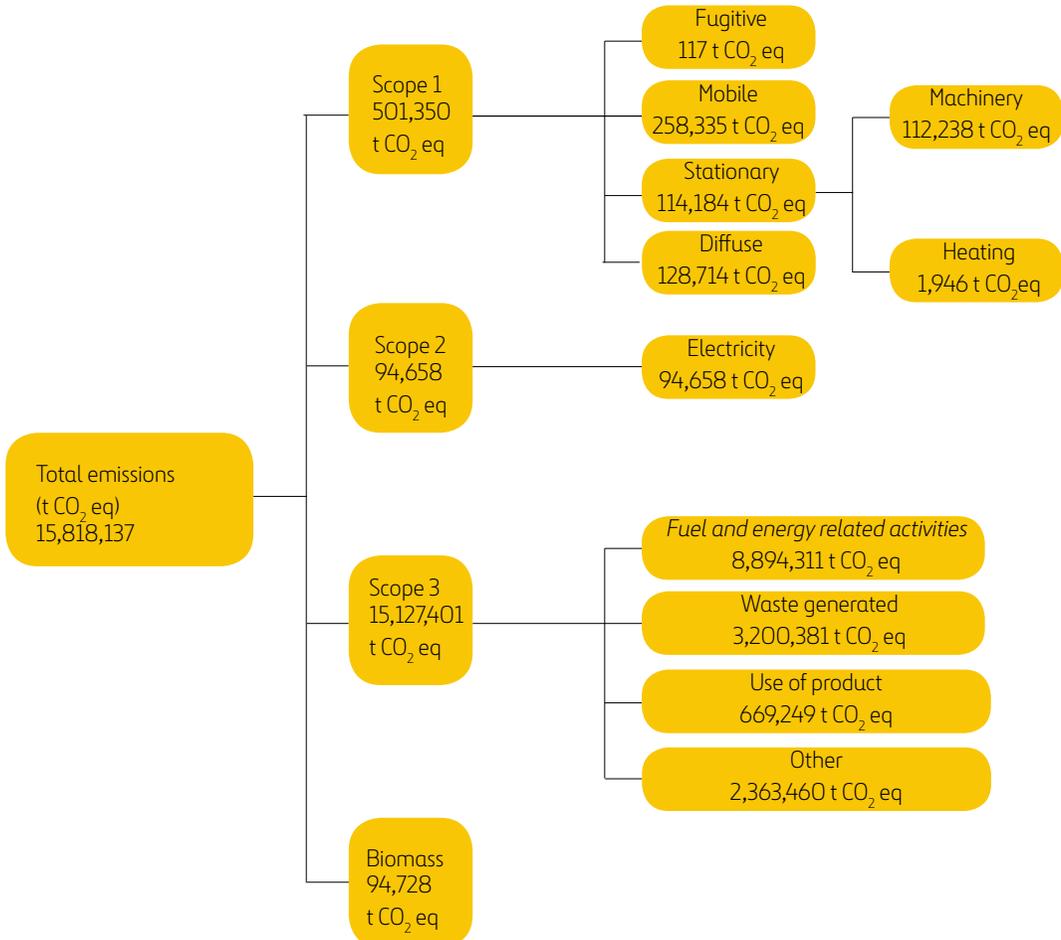
### Emissions Inventory

The most significant changes in 2013 were due to changes in the scope of the main lines of business, some of them particularly emission-intensive:

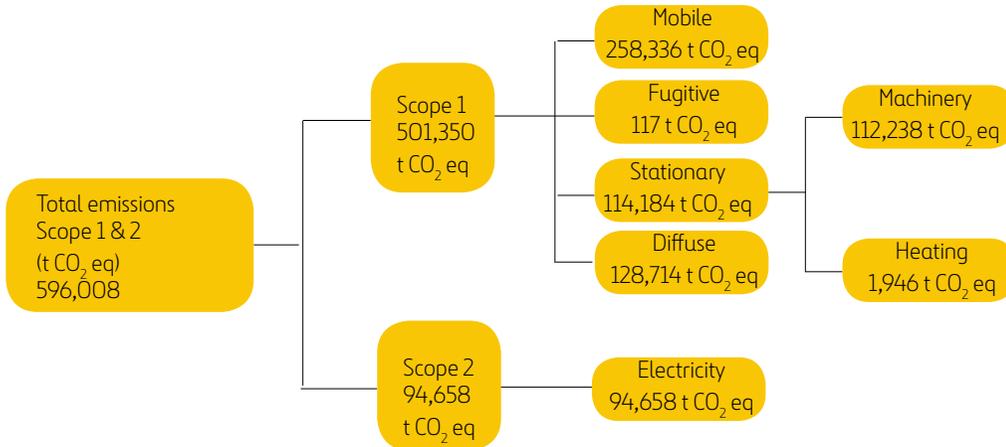
- Cadagua. A recalculation has been carried out on Cadagua emissions since 2009: a thermal sludge drying plan has been eliminated because there was no operational control over it and in fact it was not consolidated in the annual financial statements. That is why these emissions have been deducted from all the years and it was not taken into account in the calculations for 2013.
- Steel Ingeniería. This company was acquired and consolidated into Ferrovial Servicios in 2013. To analyze the changes in emissions those for 2009, 2010, 2011 and 2012 have been estimated.
- Enterprise. This company was acquired by Amey and included into its scope of consolidation. To help analyze the emissions those for 2009, 2010, 2011 and 2012 have been estimated.

- Ferrosfer and Cespa. The two companies were merged in 2013. Starting this year they will operate under the Ferrovial Servicios brand.

Greenhouse gas emissions (Scope 1 & 2 & 3 & Biomass) in absolute terms, by type of source



## Ferrovial greenhouse gas emissions (Scope 1 and 2. 2013)



## Greenhouse gas emissions over time (Scope 1 & 2) in absolute terms, by company (t CO<sub>2</sub> eq)

Business area	Company	2009	2010	2011	2012	2013
Construction	Budimex	47,665	47,665	56,590	68,853	62,394
	Cadagua	63,221	51,568	44,803	48,062	48,107
	Ferrovial-Agroman	74,934	74,934	78,509	50,283	50,255
	Webber	52,194	52,194	44,567	45,805	31,111
Corporate	Ferrovial Corporation	896	860	724	711	638
Toll Roads	Cintra	15,684	15,195	14,179	13,633	14,287
	Amey	47,725	51,270	58,665	48,219	37,380
Services	Amey-Cespa	36,082	36,082	36,082	11,265	29,382
	Ferrovial Servicios	404,274	381,036	312,859	266,770	258,255
	Enterprise	64,198	64,198	64,198	64,198	64,198
		<b>806,873</b>	<b>775,002</b>	<b>711,176</b>	<b>617,799</b>	<b>596,008</b>

In 2013 Ferrovial's emissions in absolute terms on a global scale fell by 26.1% with respect to the baseline year 2009 and 3.5% on 2012 (21,733 t CO<sub>2</sub>eq).

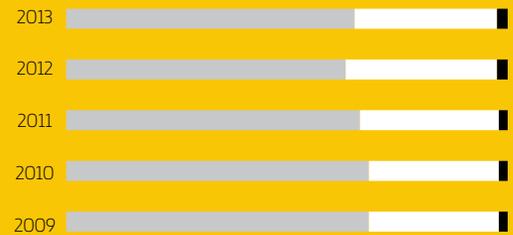
In general, companies are continuing to reduce their emissions in absolute terms, except for Amey-Cespa, which increased its emissions in this period due to a notable (over 100%) increase in landfill waste managed, with the consequent increase in biogas emissions. As is well known, increases in the flow of these emissions have a notable impact on the footprint as a whole. To offset this increase to a large extent, Amey-Cespa has changed the origin of its electricity to 100% renewable.

Cadagua is another company that reflects a slight increase in its emissions on 2012 figures, due to the growing internationalization and increased activity in other countries.

In terms of carbon intensity (see accompanying table) the main indicator for calculating reduction targets, the figures obtained in 2013 reflects the result of the efficiency measures implemented over these years, given that although revenue has increased, greenhouse gas emissions in relative terms have not only been restricted but have actually fallen.

The indicator in the table measures the changes in absolute emissions against the volume of the company's activity, using net revenues as the best indicator of this. In 2013 Ferrovial reduced its "Financial intensity" carbon intensity indicator by 31.72% against 2009. This provides sufficient margin for compliance with the target reduction of 21.3 % established in the roadmap for emission reduction, not counting any temporary cyclical aspects that may have influenced the indicator (e.g. the serious economic crisis in Spain since the end of 2008).

### Greenhouse gas emissions (Scope 1&2) over time by business area



	2013	2012	2011	2010	2009
Services	65%	63%	66%	69%	68%
Construction	32%	34%	32%	29%	29%
Toll Roads	2%	2%	2%	2%	2%

### Greenhouse gas emissions over time (Scope 1&2) in relative terms. (*Financial Intensity*)

t CO <sub>2</sub> eq/ M €	Reduction 10/09	Reduction 11/09	Reduction 12/09	Reduction 13/12	Reduction 13/09
74.05	-5.87	-10.65	-16.52	-8.46	-31.72

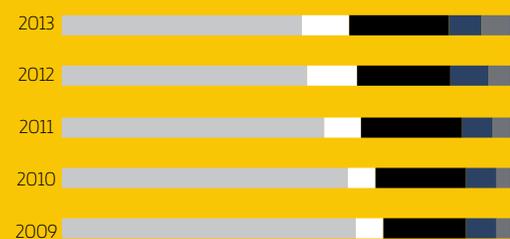
Services has a slightly bigger weight in the breakdown by emissions by business areas (two percentage points) as a result of the consolidation of the companies Enterprise and Steel.

### Greenhouse gas emissions over time (Scope 1&2) by source



	2013	2012	2011	2010	2009
Diffuse	22%	18%	29%	33%	34%
Stationary	19%	18%	17%	13%	13%
Fugitive	0%	0%	0%	0%	0%
Mobile	43%	47%	40%	39%	38%
Electricity	16%	17%	14%	15%	16%

### Greenhouse gas emissions over time (Scope 1&2) by country



	2013	2012	2011	2010	2009
Spain	54%	55%	59%	64%	66%
Poland	11%	11%	8%	6%	6%
United Kingdom	22%	21%	22%	20%	19%
U.S.	7%	8%	7%	7%	7%
Other	6%	5%	4%	3%	3%

Greenhouse gas emissions generated by Ferrovial activities are classified into:

- Diffuse. These are emissions not associated with a specific emission point, such as biogas emissions from landfills. They have fallen by 12.1 percentage points on 2009 figures.
- Electricity. These indirect emissions are a result of consumption of electricity purchased from other companies that produce or control it.
- Stationary equipment: These are emissions from fixed equipment such as electricity generators, boilers, furnaces, burners, turbines, heaters, incinerators, motors, torches, etc. that use fossil fuel to generate heat, electricity or vapor, or are used to carry out a company process. Machinery used on site is included within this group.
- Fugitive. These proceed from the consumption of coolants. These emissions are negligible compared with the others.
- Mobile. They arise from fuel combustion in vehicles and motorcycles managed by the company.

### Greenhouse gas emissions by biomass combustion

Includes emissions from combustion of captured and channeled biogas and biodiesel in vehicles. Biogas is burnt mainly in cogeneration processes or in flares.

This year emissions from combustion of biomass have increased by 61.9% due to the opening of four wastewater treatment plants (WWTP), and the biogas generated has been burned.

Business area	Company	Emissions (t CO <sub>2</sub> eq) 2009	Emissions (t CO <sub>2</sub> eq) 2010	Emissions (t CO <sub>2</sub> eq) 2011	Emissions (t CO <sub>2</sub> eq) 2012	Emissions (t CO <sub>2</sub> eq) 2013
Construction	Cadagua	1,191.08	1,407.00	14,698.80	16,671.60	50,159.56
Services	Amey-Cespa	7,436.18	7,436.18	7,436.18	6,972.46	6,563.66
	Cespa	25,671.98	28,156.22	28,533.10	34,921.12	38,005.00
	Ferrosor				14.42	0.00
Total		34,299.24	36,999.40	50,668.08	58,579.60	94,728.22

### Case study

#### **The Carbon Footprint application**

The “Carbon Footprint” application was developed and started up in 2013 to calculate and monitor the carbon footprint, as well as monitoring the reduction targets and the decisions made with respect to climate change.

Ferrovial calculates 100% of the carbon footprint of all its activities and in all countries. This is a major effort in terms of resources and people dedicated to the monitoring, integration and internal verification of emissions, particularly considering the huge volume of data broken down geographically and the multiplicity of regulatory environments, as well as the technical details to take into account.

The development of this computer platform contributes the following operational improvements for the management of the carbon footprint at global level:

- 1) The application captures the data from existing applications, files downloaded using other tools, or manually.
- 2) By centralizing all the consumption and information from all the business areas, companies and countries, the risk of loss is reduced and the verification process is facilitated.
- 3) Includes the main calculation methodologies such as GHG Protocol, DEFRA and DECC.
- 4) The calculation and recalculation of emissions has been automated.
- 5) Ensures data traceability.
- 6) The high number of reports and indicators makes analysis of the decisions taken and the monitoring of targets easier.
- 7) It is a bilingual (Spanish-English) application that is open to all users related to climate change. They may find it useful in their day-to-day operations (contracting or preparation of bids).

## Extension of the scope of indirect emissions (Scope 3)

Scope 3  
15,127,401  
t CO<sub>2</sub> eq

- Fuel and energy related activities  
8,894,311 t CO<sub>2</sub> eq
- Investments  
598,101 t CO<sub>2</sub> eq
- Use of sold product  
669,249 t CO<sub>2</sub> eq
- Capital Goods  
648,426 t CO<sub>2</sub> eq
- Purchased goods and services  
593,438 t CO<sub>2</sub> eq
- Upstream transportation and distribution  
461,333 t CO<sub>2</sub> eq
- Waste generated in operations  
3,200,381 t CO<sub>2</sub> eq
- Business Travel  
6,969 t CO<sub>2</sub> eq
- End of Life treatment of sold products  
53,353 t CO<sub>2</sub> eq
- Upstream leased  
1,022 t CO<sub>2</sub> eq
- Employee commuting  
819 t CO<sub>2</sub> eq

Ferrovial calculates all its emissions following the guidelines included in the *Corporate Value Chain (Scope 3) Accounting and Reporting Standard* published by the Greenhouse Gas Protocol Initiative, the WRI and the WBCSD. A specific reporting methodology has been developed in parallel to calculate the Scope 3 emissions. It has been included in a technical instruction.

Ferrovial calculates 11 of the 15 categories included in the document, as it considers them relevant in the portfolio of the organization's activities globally. The emissions in the following categories do not apply to Ferrovial activities and have therefore been excluded from the calculations:

- *Downstream transportation and distribution*. Ferrovial does not market products that are transported or stored.

- *Processing of sold products*. Ferrovial does not have products that are to be processed or included in another process to obtain another product.
- *Downstream leased assets*. Ferrovial does not have assets leased to other companies.
- *Franchises*. Ferrovial does not act as a franchisor.

The data reported have been calculated using data available as of February 2014. After the process of external verification, some specific changes may be made to these data.

Below are the activities, products and services with respect to which Scope 3 has been calculated.

### ***Purchased goods and services***

Includes emissions related to the life cycle of materials bought by Ferrovial that have been used in products or services offered by the company. This includes the emissions derived from the purchase of paper, wood, water and other significant materials (concrete in the construction division, asphalt in Amey and asphalt aggregate in Budimex).

### ***Capital goods***

It includes all the upstream emissions (i.e. cradle to door) for the production of equipment goods bought or acquired by the company in the year, according to the information included in the Consolidated Financial Statements for 2013.

### ***Fuel and energy related activities***

This section includes the energy that is necessary for producing the fuel and electricity consumed by the company and the loss of electricity during its transport.

### ***Upstream transportation and distribution***

It includes emissions from the transport and distribution of products reported in the category of "*purchased goods and services*".

### **Waste generated in operations**

Emissions under this heading are related to waste generated by the company's activity and reported in 2013.

### **Business travel**

Includes emissions associated with company trips: train, plane and taxi reported by the main travel agency that the group works with in Spain.

### **Employee commuting**

It includes emissions from the movement of employees from their homes to their jobs in the company headquarters in Spain.

### **Investments**

This calculates emissions related to investments in British airports. Data for 2013 are not available as of the publication date of this report, so emission figures for 2012 have been used.

### **Use of sold products**

Ferrovial calculates the emissions from the use of land transport infrastructures managed by Cintra.

### **End of life treatment of sold products**

This category includes the emissions from the elimination of waste generated at the end of the useful life of products sold by Ferrovial in the reporting year. Only the emissions derived from products reported in the category "purchased goods and services" have been taken into account.

### **Upstream leased assets**

Includes emissions related to the consumption of electricity in client buildings where Amey carries out maintenance and cleaning and manages consumption.

### **NO, SO and other significant emissions**

Emissions of other gaseous pollutants are calculated on the basis of fuel consumption:

a) Emissions generated by the combustion of natural gas, diesel, fuel oil and propane boilers:

NOx (t)	CO (t)	NM VOC (t)	SOx (t)	Particulate (t)
84.67	32.90	7.02	87.17	17.25

b) Diesel and gasoline combustion in motor vehicles:

CO (t)	NM VOC (t)	NOx (t)	Particulate (t)
1,300	181.98	933.76	125.38

c) Diesel combustion in mobile equipment used in construction:

CO (t)	NM VOC (t)	NOx (t)	Particulate (t)
269.50	72.21	782.51	54.79

d) Emissions caused by consumption of power acquired from the grid. The calculation takes into account the electricity mix of each country where Ferrovial operates:

NOx (t)	CO (t)	NM VOC (t)	SOx (t)	Particulate (t)
135.07	54.59	1.01	203.23	11.15

Emissions caused by coolants (t CO<sub>2</sub> eq)

	CO <sub>2</sub>	F M100	HFC227ea	R22	R407C	R410A
Enterprise	0.04	2.21	13.14	0.26	9.11	1.49
Ferrovial Corporation				18.2	14.45	4.44

In 2013 emissions from the refilling of coolants amounts to 117.25 t CO<sub>2</sub> eq, 5.4% down on the previous year.

**Emissions avoided**

The emissions avoided by Ferrovial come from:

- Sorting activity in waste treatment plants and biogas capture in landfills.
- Generation of “green” electricity in biogas and natural gas cogeneration plants.
- Extension of green purchasing policies across the supply chain, as well as other sources.

**a) Emissions avoided by sorting and biogas capture**

Waste management operations prioritize reuse over elimination, thus reducing the volume of landfill waste and therefore potential greenhouse gas emissions. Furthermore, where emissions are eventually generated in a landfill they are captured to prevent direct methane (CH<sub>4</sub>) emissions into the atmosphere and to allow it to be used. In 2013 these processes have avoided the emission of 1,233,117 t of CO<sub>2</sub>, 1% more than the previous year.

		2009	2010	2011	2012	2013
CESPA	Greenhouse gas avoided by sorting (t CO <sub>2</sub> eq)	189,981	212,186	253,826	282,405	302,295
	Greenhouse gas avoided by biogas capture (t CO <sub>2</sub> eq)	519,604	628,874	694,650	830,923	843,025
AMEY-CESPA	Greenhouse gas avoided by sorting (t CO <sub>2</sub> eq)			8,522	53,797	35,798
	Greenhouse gas avoided by biogas capture (t CO <sub>2</sub> eq)				0	53,100
<b>TOTAL</b>					<b>1,220,225</b>	<b>1,231,104</b>

## b) Emissions avoided by energy generation in landfills

	2009	2010	2011	2012	2013
Amount of electricity generated from biogas recovery (GJ)	308,959.00	361,593.00	398,614.00	448,434.00	520,751.00
Amount of thermal energy generated from biogas recovery (GJ)	146,666.00	102,568.00	102,946.00	134,060.00	187,632.40

Biogas captured at landfills is used to generate power and thermal energy at cogeneration plants. In 2013 Cespa generated 708,383 GJ of energy. The process of capture not only avoids the emission of greenhouse gases into the atmosphere, but also generates energy from renewable sources.

In 2013 there was an increase of 21.6% in energy production, and the consumption of this energy from renewable sources meant avoiding 50,405 t CO<sub>2</sub> eq.



## c) Emissions avoided by the generation of energy in thermal sludge drying plants

	Electricity generated (Kwh)				
	2009	2010	2011	2012	2013
Thermal sludge drying plant	47,171,222	43,011,180	60,848,185	73,507,530	39,549,004
WWTP	6,011,047	7,127,767	4,135,679	6,526,099	29,478,819
TOTAL	53,182,269	50,138,947	64,983,864	80,033,629	69,029,836

Along with thermal sludge drying procedures at sewage treatment plants managed by Cadagua, the company has set up natural gas cogeneration plants that produce thermal energy for drying and electrical power. In 2013 the company generated a total of 69,029,836 kWh using these processes, 29.8% more than in the baseline year. It thus avoided the emission of 19,416 t CO<sub>2</sub> eq.

**d) Emissions avoided by the purchase of renewable electricity and vehicles driven by alternative fuels**

	Electricity consumed from renewable sources (Kwh)				
	2009	2010	2011	2012	2013
Cadagua	166,528	46,731,973	36,927,959	34,638,858	38,007,909
Amey					8,781,112
Enterprise	4,934,215	4,934,215	4,934,215	4,934,215	4,934,215
Amey-Cespa					4,202,565
Ferroser				1,449,269	606,410
TOTAL	5,100,743	51,666,188	41,862,174	41,022,342	56,532,211

The extension of the green purchasing policy throughout the organization has had some impact on the carbon footprint, particularly due to:

- A significant increase in the number of certified renewable energy supply contracts and self-consumption of energy generated, which avoided the emission of 22,072 t CO<sub>2</sub> eq into the atmosphere. In total 37.8% more electricity was consumed in 2013 from renewable sources of energy than in the previous year.
- The steady improvements in the long-term *lease and rental* vehicle fleets have avoided the emission of 3,823 t CO<sub>2</sub> eq.

Other sources of emissions reduction, which have been partially quantified, include efficient driving courses (mainly provided in Construction and Services) and changes to production models in the civil works area, such as shorter distances in the transport of earth and other waste, or the use of more energy-efficient temporary offices.

*Feedback from analysts*

Ferrovial was recognized by the CDP for its climate change strategy. It was included in the *Climate Disclosure Leadership Index and Climate Performance Leadership Index*, which ranks companies with best practices for reducing emissions and mitigating the effects of climate change. Ferrovial has achieved a score of 99 points out of 100 and maintains the maximum A category. The company has been present in these indices since 2009.

In addition, Ferrovial has achieved a leading position in the first Supplier Climate Performance Leadership Index (SCPLI) prepared by the CDP. This index accredits the excellence of companies as suppliers of products and services that have business models low in carbon emissions.

CDP is the only global corporate environmental information system in the world. It is an international non-profit organization that offers a system for companies and cities to measure, disclose, manage and share relevant environmental information. It works with market agents, including 722 institutional investors managing assets of 87 trillion dollars, to motivate companies to publish their impact on the environment and natural resources and to take measures to reduce them.

The *Dow Jones Sustainability Index* and *FTSE4Good Index* have also recognized Ferrovial's climate strategy and carbon footprint management.

## Case study

### ***Clima Project***

The Spanish Climate Change Office (OECC) has selected the Climate Project “Plant for Processing Solid Urban Waste into bioliquid similar to Diesel C” presented by Ferrovial Servicios in the call for proposals for 2013. The OECC thus supports and promotes low-carbon activities through the acquisition of verified reductions in emissions generated.

The Clima Project selected consists of the installation of technology to recover 16,000 tons per year in biomass and plastic waste from the waste classification and composting plant of Mancomunidad Comsermancha. This processing plant uses processed waste, i.e. waste previously subjected to processes of characterization, selection, selective sorting, elimination of metals and contaminants and processes of grinding and refining, as raw material. The main product resulting is a bioliquid fuel similar to diesel “C”, thus minimizing the impact of human activity on ecosystems, and considerably reducing the carbon footprint as well as the environmental footprint of materials and waste. The SRF (solid recovered fuel) comes from:

- Biomass from the organic part of urban waste. It accounts for 60% of the SRF to be used. This biomass is mainly made up of cardboard, wood and vegetable waste, remains of food, cellulose and other organic materials.
- Mixture of plastics from urban waste. Makes up 40% of the SRF to be used. This mixture is made up of various packaging plastics used and other plastic materials from post-consumer objects.

The dumping of biomass included in SRF in a landfill would lead to its anaerobic fermentation and thus the emission of CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O. At the same time, obtaining the bioliquid similar to diesel “C”, reduces the consumption of fossil fuels and the consequent emissions of these gases derived from the process of their production and combustion.

To sum up, the development of this technology leads to numerous environmental objectives, among them the following:

- Reduction of greenhouse gas emissions.
- Saving in fossil fuels for future generations.
- Recovery of energy in materials destined for the landfill.
- Reduction in the volume of waste destined for the landfill and thus increase in the useful life of landfill containers.
- Reduction of investment for establishing and managing new landfill containers.
- Reduction of methane gas emissions derived from landfills.
- Generation of a local industry with high technological value.
- Reduction of energy costs and energy diversification in the country.

An annual average reduction of 7,277.92 t CO<sub>2</sub> eq. has been calculated, of which 6,223 t CO<sub>2</sub> eq. come from the replacement of diesel C and 1,236 t CO<sub>2</sub> eq. from waste not dumped in landfills.

A total of 109,168.8 t CO<sub>2</sub> eq. will be cut over the useful life of the plant.

## Environmental performance

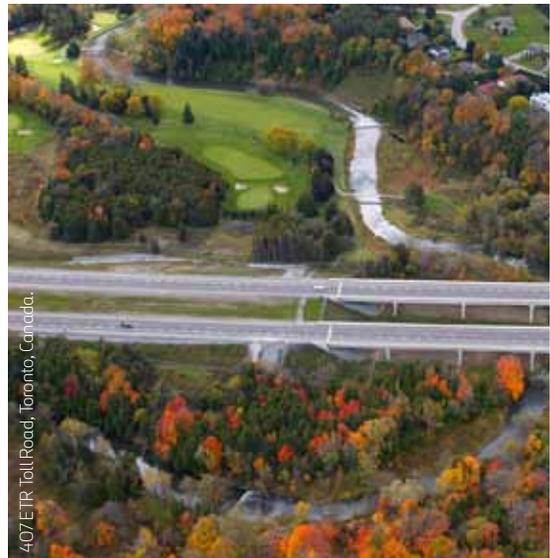
### Waste management

Waste management in all the business units is based on the principles of minimizing waste production, managing it correctly and increasing recovery, reuse and recycling.

#### Non-hazardous waste

Non-hazardous waste generated in 2013 amounted to 768,748 t. This figure includes the waste sent to treatment plants, as recycled waste is included in another category.

This figure is significantly higher than that reported last year, as it includes the figures for the urban services business, which were not reported last year. Amey alone generated 577,982 t, due to the nature of the business.



### Non-hazardous waste generated in each business area\*

2013	Total non-hazardous waste (t)
Amey	577,982.14
Cadagua	183,997.52
Ferrovial Servicios	6,080.65
Cintra	680.20
Corporate	7.02
<b>Total</b>	<b>768,747.52</b>

\* Non-hazardous waste generated in construction are included in "Construction and Demolition Waste" on page 289

### Hazardous waste

Most of the hazardous waste is generated by the group's international subsidiaries, mainly the British company Amey.

Hazardous waste generated outside the European Union has been reported for the second year (this waste is included in the "unclassified" category according to the European Waste Catalogue (EWC)).

### Hazardous waste generation (kg)

2010	2011	2012*	2013*
872,407	1,204,083	3,537,208	14,557,226

\*Value based on the sum of hazardous waste classified and unclassified under the European Waste Catalogue (EWC).

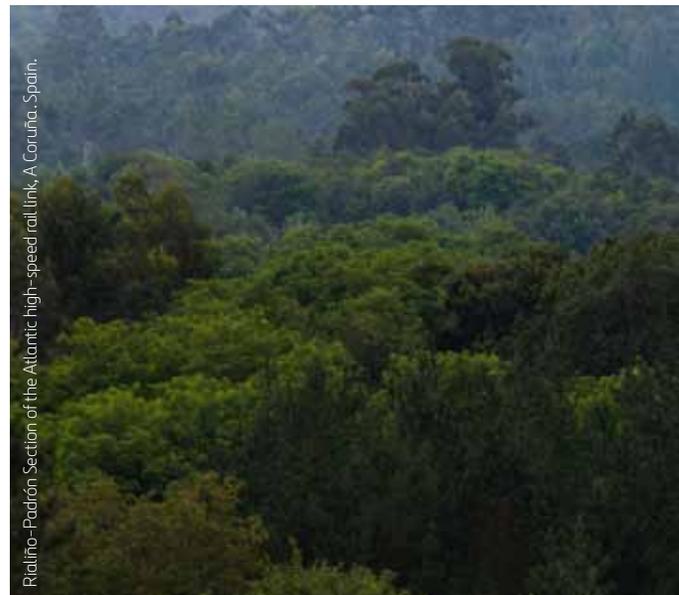
### Waste produced from construction and demolition

Management of waste from construction and demolition has always been a relevant environmental aspect in all the projects, and the objectives for improvement usually aim to improve the management of this waste while minimizing its generation. Ferrovial Agroman has in recent years established the objective of increasing the percentage of waste reuse and recycling.

The recovery of construction waste on the site itself has become the most effective and sustainable way of achieving rates of recycling construction waste that were unattainable with traditional flows of on-site waste.

In recent years Ferrovial Agroman has carried out a major technical effort on its sites to improve the processes of on-site waste recovery, within a general strategy of improving construction and demolition waste management.

A summary is presented below of civil engineering work carried out by Ferrovial Agroman in Spain in 2011-2013. This period was characterized by a notable reduction in the volume of public works.



Riallino-Padrión Section of the Atlantic high-speed rail link, A Coruña, Spain.

## Recycling

The volume of material recycled has increased significantly in all the categories. In addition, the subsidiaries that were not included in 2012 have now been included in the scope of reporting. The total material recycled amounts to 97,840 t.

Recycling of waste in each business area, by category.

2013	Paper and cardboard	Industrial plastics	Scrap metal	Other materials	Total (t)
Amey	182	130.48	82.0	69,142	69,537
Cadagua	51.5	17.88	185.6	39,395	294,375
Ferrovial Servicios International	396.124	11.7	15.5	9.7	433,054
Ferrovial Servicios Spain	59			1.24	60
Construction	8,838.38	0.42	18,374.9		27,214
Cintra	55	6.66	235.2	1.30	299
Corporate	3.6				4
<b>Total (t)</b>	<b>9,586</b>	<b>167</b>	<b>18,893</b>	<b>69,194</b>	<b>97,840</b>



## Water consumption

In 2013 there was a general reduction in water consumption, the most notable case being in the construction business. The reasons for this are not only the reduction in the volume of projects, but a change in their type, with fewer roads and tunnels. Total consumption amounted to 1,933,592 m<sup>3</sup>.

Water consumption	2010	2011	2012	2013
Cadagua	197,752	263,022	353,001	236,877
Amey	300,622	226,500	85,261	51,660
Cintra	137,233	82,051	58,667	62,092
Construction Corporation	628,838	1,438,466	950,517	531,008
Ferrovial Servicios	4,137	6,408	3,364	3,237
	1,213,485	1,217,895	1,165,006	1,048,718
<b>TOTAL (m<sup>3</sup>)</b>	<b>2,482,068</b>	<b>3,234,343</b>	<b>2,615,816</b>	<b>1,933,592</b>

The volume of reused water doubled in 2013 due to the entry into operation of a new sewage treatment plant with a volume of reused water of 1,694,753 m<sup>3</sup>.

The rest of the volumes remained at similar levels or slightly higher.

The urban services division has increased use of recycled water by 24.77%, due mainly to the identification of new contracts that reuse water and to an increasing trend in this respect.

The main use of recycled water in this division is street cleaning, washing of vehicles and machinery, fermentation and composting phases and watering of green areas.

## Volume of reused water

	2012	2013
Ferrovial Servicios Spain	707,007	730,189
Construction	88,478	98,968.55
Cadagua	959,834	2,493,116.42
<b>Total (m<sup>3</sup>)</b>	<b>1,756,819</b>	<b>3,322,274</b>

## Biodiversity

### Introduction

Ferrovial is aware of the impact that some of its activities have on the natural environment. In recent years, the company has developed innovative methods to mitigate such effects, capitalizing on the company's technological and scientific advances in the environmental restoration of infrastructure. Work is also being done to offset the damage that cannot be mitigated on site by *offsetting* mechanisms in countries that have a consolidated scheme in place with sufficient experience (e.g. the U.S.).

In addition, in 2013 the company has committed itself to the Spanish Companies and Biodiversity Initiative (IEEB) promoted by the Spanish Ministry of Agriculture, Food and the Environment. Ferrovial has been one of the first companies to subscribe the agreement. The initiative aims to "integrate natural capital into business policy and management, supporting large and medium-sized companies".

With this commitment, Ferrovial undertakes to include biodiversity in its business policy and develop its activity guaranteeing the conservation of biological diversity, the appropriate and sustainable use of its components and the fair and just distribution of the profits acquired by the use of genetic resources. In addition, the company will have to undertake actions such as the following: analyze the impact of its activity on biodiversity and natural resources, include natural protection in its management manuals, set realistic and measurable targets for conservation of biological variety and incorporate into its annual reports the activities and results obtained in this area.

### Activities in protected or ecologically valuable areas

Linear infrastructures such as highways or rail track, as well as the execution of large public works, have a significant impact on biodiversity, both in terms of occupying space and the destruction or profound alteration of habitat, and the fragmentation of the territory.

With the aim of mitigating the environmental impact and risks derived from the activities in the best way possible, work is being done to put into practice the processes of ecological restoration as well as the application of procedures for evaluating and managing risks designed specifically for these kinds of situations. However, these interventions are subject to demanding environmental legislation, normally through an Environmental Impact Statement.

In cases of temporary sites, under certain conditions the company will be authorized to occupy such sites provided that a series of prevention, mitigation and control measures are implemented with regards to the environmental impact of occupying the site. With this risk in mind, Ferrovial Agroman has consolidated the implementation of a specific procedure that is used to identify, evaluate and quantitatively monitor such situations and associated risks, as well as implementing measures to offset environmental impacts.

In 2013 work was carried out on 31 sites subject to the Environmental Impact Statement. There were restrictions due to protected fauna in 14 of them; 15 were located in Protected Natural Areas; and 20 had high-quality water-courses nearby.

For each of these sites specific "Environmental risk planning and monitoring measures" were prepared and overseen by the company's central services.

### Collaboration on the Euroscut Açores highway in the "SOS Pardela" campaign

The Cory's Shearwater ("pardela") is a protected marine bird that nests in the Azores for the last two months of the year. In 2012 the Secretary for the Environment and Sea of the Government of the Azores and the organization "Amigos de las Azores" (Friends of the Azores) asked the concessionaire to help, as most of the deaths of these birds took place due to traffic on the roads. Given that the toll road carries out 24-hour surveillance with vehicles along the concession, it agreed to collect the birds that are injured and located on the toll road. They are then deli-

vered immediately to centers for recovery. The “Amigos de los Azores” association gave a course to the surveillance team so that they know how to act. They were also given a manual on collecting these animals.

#### **Radial 4 toll road**

The Radial 4 Toll Road is working with the Environment Department of the Autonomous Region of Madrid on conserving the temporary or hidden wetland water ecosystem located in the highway’s zone of influence. This ecosystem has been formed naturally by the accumulation of a large amount of rainwater in a hollow in the ground. The presence of water in what is a much drier environment leads to a high level of biodiversity and the appearance of communities of hydrophilic vegetation such as reeds and unusual aquatic plants. In addition, this natural reservoir is an important watering and feeding area for numerous species of birds, many included in the Regional Catalog of Threatened Species of wild flora and fauna, such as the Booted Eagle, Hen Harrier, the Eurasian Stone-Curlew, the Great Gray Shrike, the Calandra Lark, etc.

#### **Euroscut Algarve**

The Euroscut Algarve toll road has worked with the association Centro de Recuperación e Investigación de Animales Salvajes de la Ria Formosa (Center for the Recovery and Research of Wild Animals in Ria Formosa - RIAS) by handing over a Griffon Vulture that was found and taken in near the highway. These birds begin their migration from Andalusia in the months of September and October toward Africa. The journey involves a great expenditure of energy and some of them are weakened or become malnourished, so it is important that they receive immediate assistance when they are found.

Once the Griffon Vulture was found it was freed together with seven others found by other associations in an action organized by Centro de Estudios de la Avifauna Ibérica (Centre for Studies of Iberian Birdlife) as part of

the LIFE “Innovation against Poisoning” project. The freed birds are tagged on their wings to help their visual location and thus to allow them to be monitored within the monitoring program for species that are bio-indicators for the use of poisons.

#### **Heathrow**

Heathrow Airport has been awarded the Biodiversity Benchmark Award from *The Wildlife Trust* for the sixth year in a row. So far, the London airport is the only one to have received this award.

The airport actively manages around 100 hectares across 13 sites for natural conservation. The area includes four nature reserve areas that are open to the public.

In its award to Heathrow, The Wildlife Trust highlighted the special care given to certain natural species.

#### **The ARTBA Globe Award for Environmental Excellence in Construction**

The LBJ Express project received the ARTBA Globe Award for Environmental Excellence During Construction. These awards are given to private-sector companies for their efforts in protecting and enhancing the environment during the planning, design and construction of infrastructure projects in the United States of America.

The environmental team of the LBJ Express Project was recognized for its Comprehensive Environmental Protection Program, as well as its Soil and Groundwater Management Plan, which has been used to manage any heavy metals discovered during construction. Additionally, the environmental team has reused millions of cubic meters of excavated soil in other parts of the project and has donated soil for use in other City of Dallas and State of Texas projects. The project also tested, treated and recycled groundwater to help with problems of drought in North Texas.

## Business management

A key aspect of the company's environmental strategy is to develop business models that are coherent with society's demands for a more environmentally sustainable approach to the planet, capitalizing on Ferrovial's technological expertise in areas such as energy efficiency, reducing greenhouse gas emissions, the sink effect of forests and eco-efficiency.

Aspects such as energy efficiency in buildings, the integrated management of cities, or low-emission mobility, as well as conservation of biodiversity, are considered by the organization as sources of inspiration for the development of new business models. The aim of this is to create long-term value, converting Ferrovial into a strategic partner for governments in the countries where it operates and helping meet global environmental goals.

### Sustainable mobility

The shift to low-emission transport infrastructure will undoubtedly be based on convergence between infrastructure and information and communication technologies, helping to make for more flexible systems and reduced energy consumption and greenhouse gas (GHG) emissions. The idea is to create truly intelligent infrastructures that adapt to demand in real time, thus ensuring fluid transport and activating solutions for more sustainable mobility. Examples include systems for predicting traffic events, the SAVE advanced entry-lane system for toll roads and the DAVAO+ high-occupancy vehicle detection system. All of these have been developed by the Intelligent Infrastructures Center (IC3), which was set up in 2010. The deployment of these technologies has allowed Ferrovial to develop concepts such as *managed lanes*. Infrastructure of this kind is capable of reducing the carbon footprint caused by road travel, and is currently operating in countries such as the United States and Canada.

### Smart cities

The Services area began developing the "SmartCities" concept more than three years ago, within the framework of its municipal and energy efficiency services. This highly practical approach is based on lower costs for local governments, investment in technology, increased energy efficiency and improved quality of life for citizens.

The new model has already been implemented in a number of cities such as Birmingham and Sheffield (both in the UK), where Ferrovial Servicios has long-term contracts. Investment in advanced technologies help cut energy consumption and the emission of greenhouse gases, while reducing the economic cost of municipal services for taxpayers. The project has been a success and well received by the public, local unions and employees. According to preliminary estimates, a saving of around 20% on the current costs of urban services is feasible.

### Sustainable forestry management (*SmartForests*)

Ferrovial has been working since 2012 to identify opportunities in the field of biodiversity conservation. In countries such as Spain woodlands are a source of natural resources, economic activity and jobs in rural areas. These jobs are crucial to sustaining local populations and helping to conserve habitats over the long term. However, the current policy of cutting public spending has substantially reduced public investment in protecting Spain's woodlands. The result could mean negative effects and risks for biodiversity and economic activity in rural areas.

In this difficult situation, Ferrovial's position is that private capital can play a key role by replacing missing public investment, provided that sustainable and long-term management of the forests is ensured, as well

as public use of the woodlands that form part of the natural heritage. To this end, in partnership with environmental associations, the *Forest Stewardship Council* (FSC) and the scientific community, Ferrovial is working actively with several public authorities in Spain on a pilot project for managing public woodlands.

In 2013 this model has partially taken off in the autonomous region of Catalonia (Spain) with the installation of the first biomass plants that use a by-product of the forestry management of a large area of woodlands.

## Green construction. Bioclimatic buildings

Over the last three years, Ferrovial group companies have constructed more than 98,000 m<sup>2</sup> of buildings and over 142,000 m<sup>2</sup> of urban developments as part of its bioclimatic projects. Of the 11 buildings constructed using these criteria, 2 have been granted BREEAM certi-

fication and 8 have been certified according to the LEED tool (*Leadership in Energy and Environmental Design*), developed by the U.S. Green Building Council, and one with the Spanish “Verde” (Green) tool. These three certification systems combine a set of tools designed to measure, evaluate and adapt the sustainability levels of buildings, at the design, construction and maintenance stages.

Since 2009 Ferrovial has been an active member of the *Green Building Council’s* regional Spanish chapter, working with the institution and the international World GBC on projects such as activating urban restoration pursuant to energy efficiency requirements or promoting “Green” and LEED credentials.

The following table shows the details of the projects with sustainability certification in which Ferrovial Agroman has taken part over the last three years:

Project	Area	Certification
Repsol Venturada	Madrid Civil Works Div.	BREEAM
New Building ICTA-ICP	Catalonia Div.	LEED
3M Customer Center	Madrid Building Div.	LEED
DPC BBVA Tres Cantos adaptation	Madrid Building Div.	LEED
Av. Castellana building adaptation	Madrid Building Div.	LEED
DPC Alcala JV	Madrid Building Div.	LEED
New Banco Popular Head Office develpt.	Madrid Civil Works Div.	LEED
Repsol Alberto Aguilera	Madrid Civil Works Div.	BREEAM
Coca-Cola headquts.	Madrid Building Div.	LEED
Preparation IMDEA lot Móstoles	Madrid Civil Works Div.	LEED
Environmental Resources Center in Valladolid	Castile-Leon Div.	VERDE (GREEN BUILDING COUNCIL SPAIN)

## Case study

### **T2A Heathrow**

The new Terminal 2 in Heathrow was designed following strict sustainability criteria with the aim of becoming a benchmark at a global level.

The target was set to reduce CO<sub>2</sub> emissions by 40% compared with the previous building. The sustainability criteria were applied from the design stage.

Quality of the materials:

- Maximize the use of natural materials in finishes.
- Maximize the use of certified FSC wood (controlled felling).
- Maximize the specification of materials with a low VOC content (emission of harmful volatile organic compounds).
- Maximize the use of local resources.
- Maximize selection of coolants and materials that do not damage the ozone layer and have a greenhouse gas effect of below five.
- Minimize the specification of materials containing PVC.

Construction phase:

100% of the demolition materials from the old Terminal 2 and adjacent building (Queen's Building) have been recycled to contribute to the sustainable building plan.

The new Terminal 2 is being subject to the building's sustainability certification.

(BREEAM). The highest quality standards have been achieved in the construction process, raising the rate of separation of waste from 33% in February 2012 to 70% in November 2012, and reducing carbon dioxide emissions from 3 metric tons to 1.61 metric tons for each 100,000 pounds of revenue.

- Prefabrication and standardization of structural elements.
- Maximizing the use of recycled construction materials for filling.
- Waste separation.
- Special care with protected species during demolition (bats and blackbirds).

Final installations:

- Development of an energy-efficient center, supplied by renewable energy, where air conditioning will be regulated.
- The roof design of the terminal, in undulating waves with north-facing skylights, captures maximum natural light to reduce artificial lighting.
- Recharging stations for electric vehicles.
- Conventional air diffusion system, with control of infiltration and free cooling.
- Low-cost engines and IT equipment.
- Centralized building management system.

## Restoration of buildings with criteria of energy efficiency

In the city, urban restoration of buildings using energy-efficient criteria for both housing and the commercial sector, is considered by experts as the future of building activity. For the last few years Ferrovial has spearheaded, particularly in Spain, an initiative that aims to refocus the business model in the sector, which until now has been based on new construction, toward a new approach geared toward the improvement of living conditions in the existing building stock.

This option offers several significant benefits. A report from the Working Group For Rehabilitation (Grupo Técnico de Rehabilitación - GTR), of which Ferrovial is a member, calls for an ambitious urban renewal and energy rehabilitation program, involving 10 million homes in Spain by 2050. The program is a great opportunity due to its potential in terms of generating economic activity and, in particular, creating an estimated 140,000 jobs per year in Spain alone.

The latest report presented at the end of 2013 is available from the following link: <http://www.gbce.es/es/GTR>. Ferrovial made significant progress in 2013 in a pilot project for energy rehabilitation and urban renewal across Spain. This year a prior agreement has been reached to create a consortium that can develop renewal projects in the cities of Madrid and Zaragoza, affecting more than 2,800 homes in both cities in an initial phase. The consortium is made of up Ferrovial, together with a leading company in the energy sector, the municipal housing companies of the two cities, and the *European Climate Foundation* (ECF). The ECF has stated among its objectives the development of a pilot energy renewal project on a large scale in Spain, to serve as a success story for other Member States of the European Union.

## TABLE OF ENVIRONMENTAL INDICATORS

The table below includes the environmental indicators that have not been expressly mentioned in the text.

	2013	Unit
Volume of tropical timber	6.76	m <sup>3</sup>
Percentage of timber of guaranteed origin	73	%
Total volume of paper acquired	828,631	kg
Total volume of timber acquired	73,760	m <sup>3</sup>
Percentage of paper with FSC seal	32	%
Percentage of recycled paper	40	%
Percentage of paper bleached without chlorine	67	%
Procurement of key	Asphalt	2,074,705 t
	Concrete	7,001,862 t
Total vehicles in the fleet held under ownership	18,567	No.
Percentage of company vehicles powered by alternative fuels	4.12	%
Consumption of reused water	3,322,274	m <sup>3</sup>
Proposed penalties in the year due to disciplinary proceedings opened in the year	271,968	euro
Construction and demolition waste	10,882,869	m <sup>3</sup>
Total soil from excavation	20,199,553	m <sup>3</sup>
Topsoil reused	12,910	m <sup>3</sup>
Material sent to landfill outside the worksite	3,102,299	m <sup>3</sup>
Materials reused at worksite	6,812,610	m <sup>3</sup>
Materials sent to other worksite or authorized landfill	5,375,738	m <sup>3</sup>
Treated flow with incidents	17,740,711	m <sup>3</sup>
Total number of accidental spillages.	12	No.
Total environmental investments and costs in the year	53,131,614	euro

		2013	Unit	
Fuels used by stationary and mobile sources (total)	Diesel	4,381,743.85	GJ	
	Fuel oil	17,856.57	GJ	
	Gasoline	314,562.58	GJ	
	NG	2,234,349.98	GJ	
	LPG	4,276.07	GJ	
	Propane	3,126.90	GJ	
Consumption of energy acquired by primary source	Coal	729,384.88	GJ	
	Diesel	124,347.44	GJ	
	Gas	749,888.72	GJ	
	Biomass	48,384.11	GJ	
	Waste	10,933.64	GJ	
	Other	349,147.49	GJ	
Electricity consumption	Amey	8,781,112	kWh	
	Services	Amey-Cespa	4,202,564.70	kWh
		Enterprise	10,397,854.90	kWh
		Ferrovial Servicios	68,820,023.21	kWh
	Construction	Budimex	38,606,757.47	kWh
		Cadagua	120,094,744.17	kWh
		Ferrovial Agroman	16,486,235.53	kWh
		Webber	7,463,338	kWh
	Toll Roads	28,302,112.88	kWh	
	Corporate	Corporate	1,344,562	kWh