



# 4x4s: Wrecking the Planet?

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## 4x4s: Wrecking the Planet?

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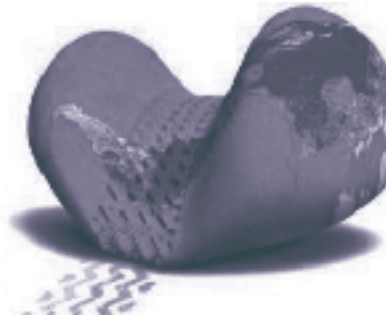
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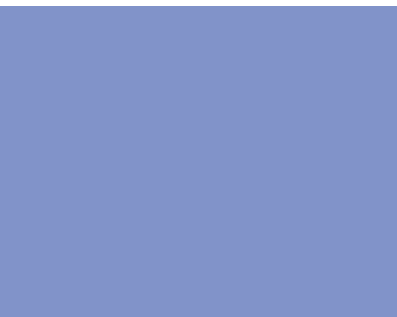
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# Introduction: why focus on 4x4s?



What do 4x4s have that other vehicles lack? They are a particular type of vehicle due to their size and specifications. In general, they pollute and consume more than the average car. Furthermore, their impact on the environment differs from that of other cars. Finally, they pose safety problems and they take up more than their fair share of urban space.

It is clear that 4x4 models and brands differ according to their size, level of pollution and safety. Indeed, other types of vehicles may well have a bigger impact than some 4x4s.

We are not trying to demonise these vehicles on a mere whim. As far as we're concerned, the key problem is CO<sub>2</sub> emissions rather than the type of vehicle that produces them. Moreover, the issue at stake is erosion and noise pollution, whether produced by a 4x4 or a quad. What matters is the increasingly restricted urban space, whether caused by the growing presence of 4x4s or people carriers. Safety problems for other vehicles and pedestrians are also of great importance, regardless of whether the vehicle in question is a 4x4 or any other type of vehicle.

It is important to bear in mind this fundamental approach throughout this document, because a failure to do so would risk being biased or fail to present the whole truth. In fact, as mentioned in the section "Good practices", when a town or city council or any other authority decide to take measures against a 4x4 vehicle, they are not targeting the vehicle itself but the cause of the problem. Also, as shown under the section "Proposed measures," most of the actions proposed are directed towards limiting the impact of vehicles, independently of what kind of car they are.

However, we believe that it is necessary to restrict 4x4s due for two reasons which concern us. Firstly, 4x4s contribute to all the aforementioned problems, as they encompass all the harmful aspects of vehicles. In general, 4x4s are the personification of the unsustainable transport system we are moving towards, as this type of vehicle exemplifies all the different negative effects on the environment and our general health.

Secondly, there is a rise in demand for these vehicles. In Spain, 4x4 car sales keep increasing. It is also likely that most consumers are not aware of the negative effects of such vehicles and thus do not relate them, for example, with climate change. At the same time, manufacturers promote them as a social status symbol, which leads to these vehicles being bought for everyday use and not for what their initial intended purpose. 4x4s were created to be used as 'working' vehicles within a rural environment. Why should they be used inappropriately when they have a negative impact on our health, as well as on the environment? Is the freedom of choice of a few enough to justify everyone else's loss?



## The impacts of road transport

The transport sector has had the greatest environmental impact on developed society. Road transport, in particular, is the cause of most problems, as the car is the most widespread means of transport, not only with regard to transporting people (91 % in Spain) but also with regard to transporting goods (82%).

In the 60s, the use of cars by families became widespread and was justified by the increasing size of cities and the need for travel, which arose from the growing distances being covered. Thus, this transport system was based on the increasingly well-defined social spaces: the suburbs surrounding a big city, the downtown, as well as the shopping and leisure areas in big commercial centres, situated on the outskirts of cities. However, this lifestyle model has come with huge environmental, social and functional costs.

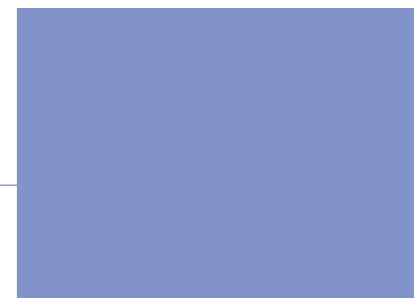
In cities, for example, cars are the main cause of air pollution, and therefore contribute to respiratory diseases, heart problems and cancer. Moreover, cars are far from being the most efficient means of transport. Although Spain has yet to reach the incredible amount of cars per person witnessed in the USA (there are more cars than driving licenses), traffic jams in Spanish cities are becoming increasingly worse.

To briefly summarise, and without covering every single point, here are some of the negative effects of road transport:

- ▶ It makes a huge contribution to climate change. Emissions increase more in the transport sector than in any other sector, and 90% of our emissions come from road transport.
- ▶ The increasing network of roads and highways destroys irreversibly a significant amount of land, which is valuable to both agriculture and nature. (more than 5% of the Spanish territory is covered - or directly affected- by roads).
- ▶ There is a loss of biodiversity and a fragmentation of ecosystems.
- ▶ Obtaining raw materials needed for the manufacture of vehicles has a negative impact, which increases according to the size and mass of the car.
- ▶ Oil extraction has a negative impact on the environment, and almost 100% of all means of road transport consume petrol. Also, industries responsible for the building of necessary road infrastructure (cement factories, quarries, etc) have a negative effect on the environment.
- ▶ An increase in transport has led to an invasive building in the countryside.
- ▶ Public health is put in danger due to high levels of noise pollution and CO<sub>2</sub> emissions.
- ▶ It generates huge amounts of waste, such as used cars, oils and tyres.

- ▶ There is a high accident rate (every year more than 4000 people die on our roads) with victims also pedestrians and cyclists.
- ▶ We must not forget the large investment made in the construction of new roads and highways, whereas funding for other social issues, such as education and health services, is cut back every year.

The increasing use of 4x4s and other big and powerful cars means that the already negative impact of road transport will get even worse, as they require more raw materials for their manufacture, consume more petrol, produce more noise, emit more greenhouse gases, and also emit other polluting substances dangerous for our health.





## CO<sub>2</sub> emissions of 4x4s

One of the worst problems related to 4x4s is their far higher than average fuel consumption. Fuel consumption is directly related to CO<sub>2</sub> emissions in the atmosphere, which are the main cause of global warming. The burning of one kilogram of petrol or diesel produces three kilograms of CO<sub>2</sub>.

Between 1990 and 2004, CO<sub>2</sub> emissions due to transport increased by 32% in the European Union zone. In 1990, the sector had contributed 21% to the EU's total CO<sub>2</sub> emissions, and by 2004 it had reached 28%.<sup>1</sup> In Spain, in the year 2005, transport was responsible for 30% of CO<sub>2</sub> emissions. However, 2006 was the first year since the Kyoto Protocol came to effect, which led to a decrease for the first time in the overall emissions in our country (4%).<sup>2</sup> Nevertheless, emissions due to transport did not stop growing. The total number of cars in Spain has increased by 28% in seven years (1997-2004).<sup>3</sup>

By signing the Kyoto Protocol the European Union committed itself to reducing its CO<sub>2</sub> emissions in the period 2008-2012 by 8%, by taking as a basis the 1990 emission levels. Spain was required not to increase its emissions by more than 15% - based on 1990 levels - a goal that it will clearly be unable to reach.

In 1998, the European car industry committed itself not to exceed an average emission of 140gr/km of CO<sub>2</sub> in all cars manufactured in the period 2008-2009.<sup>4</sup> This voluntary agreement has not been and will not be fulfilled, due to a lack of interest by most companies. The European organization 'Transport and Environment' recently presented a report on the degree of the fulfilment of this goal for each company.<sup>5</sup> The results are discouraging, and they show that only 3 out of the 20 main makes of car are fulfilling their commitment. According to the last report of Faconauto (the European federation of car retailers) in 2006, the average CO<sub>2</sub> emissions in Spain by new cars and 4x4s was 151,9gr/km, which is 11gr more than the maximum set out in the agreement.<sup>6</sup>

1 EEA: Annual European Community Greenhouse. Gas emissions inventory and inventory report 2006. European Environment Agency, Copenhagen. [http://reports.eea.europa.eu/technical\\_report\\_2006\\_6/en](http://reports.eea.europa.eu/technical_report_2006_6/en)  
 2 CCOO, April 2007: Evolución de las emisiones de gases de efecto invernadero en España (1990-2006). <http://www.nodo50.org/worldwatch/ww/pdf/Emisiones.pdf>  
 3 In this period, the car pool using oil has suffered a reduction of 3,5%, while the car pool using diesel has been multiplied by three. Anyway, the car pool using oil is still a 62% of the total.  
 4 ACEA and its Voluntary Agreement to Reduce CO<sub>2</sub> Emissions. What has been Agreed Exactly? [http://www.acea.be/acea\\_1998\\_commitment\\_what\\_has\\_been\\_agreed](http://www.acea.be/acea_1998_commitment_what_has_been_agreed)  
 5 Transport and Environment. Oct 2006: How Clean is Your Car Brand? The car industry's commitment to the EU to reduce CO<sub>2</sub> emissions: a brand-by-brand progress report [http://www.transportenvironment.org/docs/Publications/2006/2006-10\\_how\\_clean\\_is\\_your\\_car\\_brand.pdf](http://www.transportenvironment.org/docs/Publications/2006/2006-10_how_clean_is_your_car_brand.pdf)  
 6 Informe Faconauto: Las marcas redujeron sus emisiones de CO<sub>2</sub> un 1,4% en España en 2006. Autoglobal, April 2007. <http://www.autoglobal.com/noticias/8000/8496.html>

The European Union has now proposed to set the maximum mandatory emission level at 130gr/km by 2012.<sup>7</sup> This limit is clearly not enough, and it further awards the lack of action taken by the industry. The European Union should maintain its 120gr/km agreement, which was signed in 1996, instead of accepting the increase, which is a backward step for the fight against climate change. In any case, even if this higher limit is implemented (the pressure is on to reduce the limit) the car industry will need to make significant progress regarding the creation of more energy efficient engines. Currently in Spain, less than 8% of the models that consume petrol and 2% of the models that use diesel emit 130gr/km. It goes without saying that none of the 4x4s on the market have emissions below this level; on the contrary, all of them are well above the limit.

### Public information on CO<sub>2</sub> emissions

A few years ago a Spanish law, the 837/2002<sup>8</sup> Royal Decree, was passed. This set out the information that must be available on fuel consumption and CO<sub>2</sub> emissions of new cars. This law is the Spanish equivalent to the EU Directive 1999/94/CE<sup>9</sup>, establishing that this information must be made available in a comprehensive guide, labels, posters and leaflets.

The label, which must display official data on fuel consumption and emissions, must be placed in a visible place in the showroom on the side of each vehicle. Furthermore, the law encourages retailers to include a label similar to that used for electrical appliances, with a range of colours (from green to red) and letters (from A to G) to identify the comparative energy efficiency of every model.

The guide, published yearly, must include a list of all new models that are being sold, with information about their fuel consumption and emission levels. It must also be available in all showrooms. Moreover, consumers could have access to a guide published by the European Union, which can be found on its web page.

Posters must be on display in each showroom and should provide information on fuel consumption and emissions for each model of each make that is on sale in that particular car dealership. Furthermore, these posters must list the 'greenest' models first.<sup>10</sup>

Finally, all the material (including graphics) used to advertise a vehicle must contain information on its official fuel consumption and emission levels.

The Institute for Diversification and Energy Saving (IDAE in Spanish) has made a database of all new vehicles sold in Spain, which can be used to obtain detailed comparative information on fuel consumption, as well as on characteristics of new cars on sale in Spain.<sup>11</sup> This institute collects information from different sources and it is also responsible for the publication of the guide, which is a law requirement (the aforementioned Royal Decree).



7 Communication of the Commission to the Council and the Parliament: La Comisión propone un límite de emisión de 120 g/km para 2012. [http://eurlex.europa.eu/LexUriServ/site/es/com/2007/com2007\\_0019es01.pdf](http://eurlex.europa.eu/LexUriServ/site/es/com/2007/com2007_0019es01.pdf)  
 8 Royal Order 837/2002, of August 2nd, regulating the info relative to fuel consumption and emissions of new vehicles. [http://www.mma.es/secciones/cambio\\_climatico/documentacion\\_cc/normativa\\_cc/pdf/rd\\_837\\_2002\\_emisiones\\_vehic.pdf](http://www.mma.es/secciones/cambio_climatico/documentacion_cc/normativa_cc/pdf/rd_837_2002_emisiones_vehic.pdf)  
 9 Directive 1999/94/CE of the European Parliament and Council, of December 13th 1999, regulating the info available to consumers relative to fuel consumption and emissions. <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2000:012:0016:0023:ES:PDF>  
 10 The Directive 2003/73/CE, of July 24th, modifies the Directive 1999/94/CE relative to the panels, giving the choice of using an electronic screen. <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:186:0034:0035:ES:PDF>  
 11 IDAE database: <http://www.idae.es/coches/index1.asp>

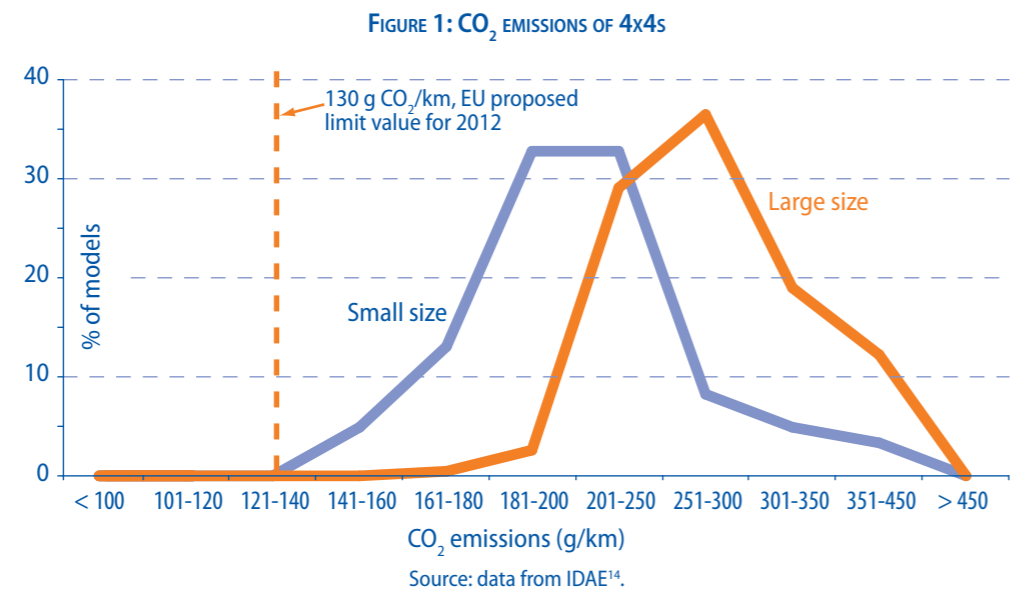
## CO<sub>2</sub> emissions produced by 4x4 vehicles in Spain

In order to analyse and compare the emissions produced by these vehicles in Spain, we have grouped the data relative to CO<sub>2</sub> emissions (g/km) in categories similar to those established by the European Decision 1753/2000/CE<sup>12</sup>. This decision segregates the data into thirteen subgroups.

The taxonomy of the vehicles used is the same as that used by IDAE, following a proposal by the *International Federation of Associations of Technicians of the Automobile Industry* (FISITA). They establish twelve categories, according to power, weight, size and car types, such as minis, small cars, medium size saloon cars, big saloon cars, medium size people carriers, big people carriers, luxury cars, sports cars, small vans, big vans, small 4x4s and big ones.<sup>13</sup>

At present, 148gr/km is the smallest amount of CO<sub>2</sub> emissions generated by a 4x4. This amount is not very high, but it goes well past the goal set by the EU for average emissions by 2012. The most polluting 4x4 vehicle generates 406gr/km. So, how does the average 4x4 fare?

As seen in Figure 1, more than 60% of small size 4x4s emit between 180 and 250gr/km of CO<sub>2</sub>. Big 4x4s (longer than 4 metres) emit between 201-250gr/km (29% of the models), 251-300gr/km (36% of the models), and up to 301-350gr/km (19% of the models).



No 4x4s presently on the market emit less than 130g. per km of CO<sub>2</sub>

Higher emissions signify much higher fuel consumption. Bigger 4x4s display fuel consumption rates that reach 16.9 litres of petrol per 100 kilometres, with an average of almost 11 litres per 100km, depending on the make, the model and the kind of fuel used.

It is true, as many 4x4 users argue, that small 4x4s consume less (an average of 8.5 litres/100 km), and there are models in which fuel consumption is similar to that of a small car (close to 6 litres). But at the same time, it is also true that there are small 4x4s that register fuel consumption levels of more than 16 litres per 100km and that produce CO<sub>2</sub> emissions of up to 400gr/km. Moreover, if we focus our attention on 4x4s sold in Spain, we will observe that only 25% fit in the 'small' category, while the remaining 75% are classified as 'big', and are thus placed in the most polluting group.

Data on vehicles sold in Spain confirm these conclusions. As seen in Figure 2, out of the top 20 best-selling 4x4 vehicles in Spain for 2006, almost all of them emit well above 200gr/km. Also,

12 Decision 1753/2000/CE of the European Parliament and Commission, 22nd of June 2000, establishing a plan to follow up the average of CO<sub>2</sub> emissions of the brand new cars  
[http://eur-lex.europa.eu/LexUriServ/site/es/oj/2000/l\\_202/l\\_20220000810es00010013.pdf](http://eur-lex.europa.eu/LexUriServ/site/es/oj/2000/l_202/l_20220000810es00010013.pdf)

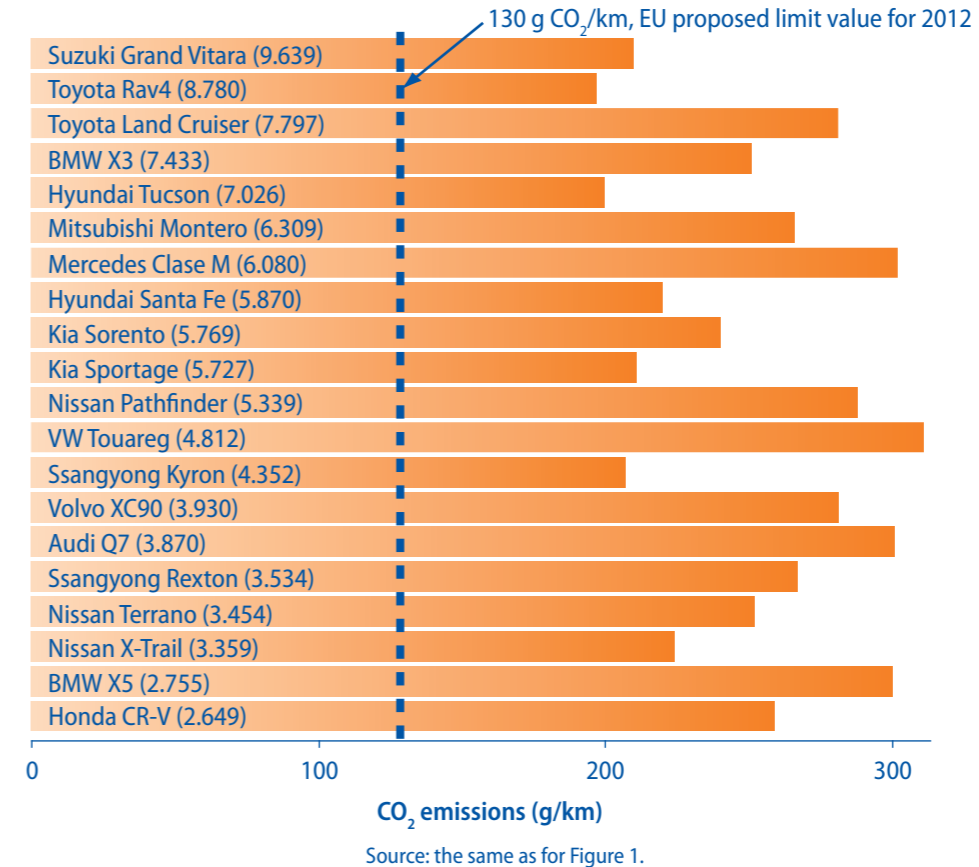
13 According to this classification, small 4x4s are those with traction to the four wheels, capacity to transit out of roads and special suspension, which length is smaller than 4,2 m, and which have two or four doors and one more on the back. Large size 4x4s are defined identically with the only difference that their length is larger than 4,2 m.

14 Database IDAE. <http://www.idae.es/coches/index1.asp>

75% of the best-selling vehicles are models from the large size category. Seven models can be found in the 201-250gr/km emissions range, nine in the 251-300gr/km range, and four emit above 300gr/km. So, even if models that emit less than 200gr/km exist, the reality is that the best-selling vehicles on the market are also the most polluting ones. Therefore, using the least polluting models to argue the case in favour of 4x4s is false.

We can conclude that, even though not all 4x4s emit the same levels of CO<sub>2</sub>, most models are high-level polluters. And, in general, the best-selling models on the market are models that pollute more.

FIGURE 2: DIAGRAM WITH THE CO<sub>2</sub> EMISSIONS OF THE 20 BEST-SELLING MODELS IN SPAIN (2006)<sup>15</sup>



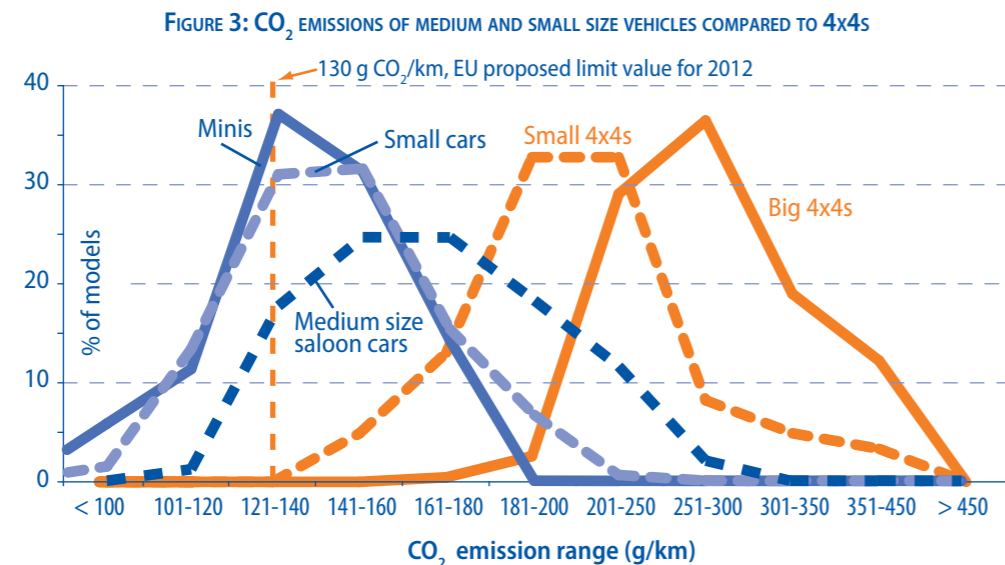
The majority of Spain's 20 best-selling 4x4s in 2006 had emission levels of more than 200g. per km of CO<sub>2</sub>

15 The numbers in the diagram correspond to the total number of vehicles sold of each model.

## Comparison with other types of vehicles

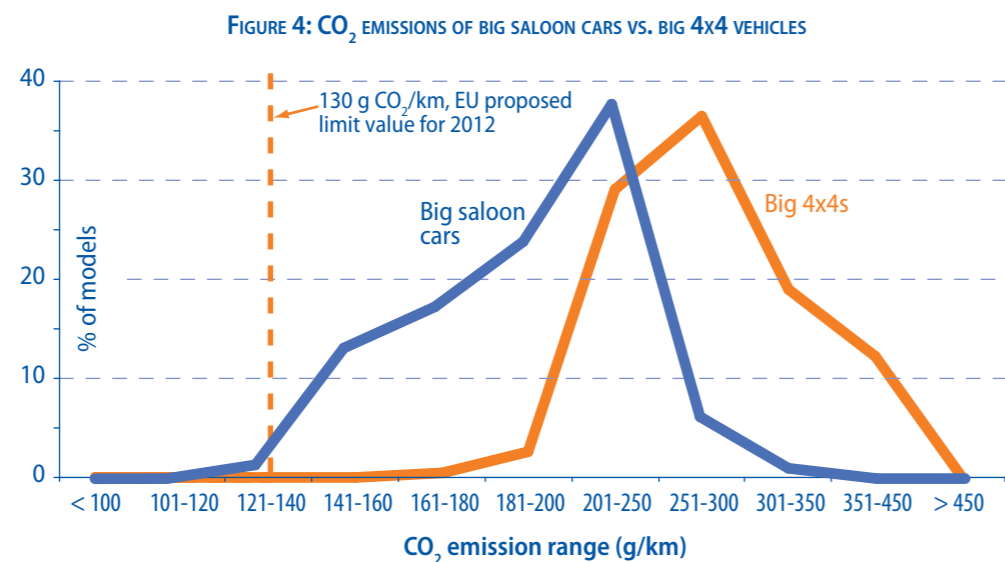
Something that is commonly argued in order to defend 4x4s is that there are other types of vehicles that pollute the same or even more than 4x4s. It can certainly be said, if analysed as a whole, that groups such as big size people carriers, people carriers, saloon cars and sports or luxury cars do not fare better with regard to CO<sub>2</sub> emission levels. However, this does not make 4x4s any less polluting.

If we compare 4x4s with medium or small cars, the results are very negative for 4x4s, as seen in Figure 3. Only a few medium sized vehicles show emissions equal to or higher than those of the less polluting 4x4s.



Source: the same as for Figure 1.

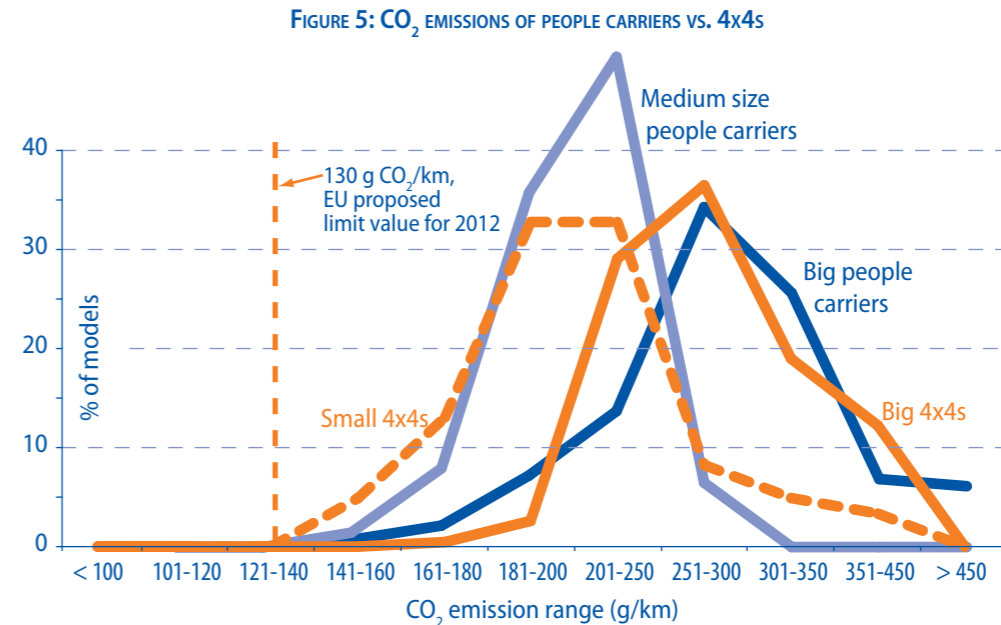
Nevertheless, if we compare big 4x4s with big saloon cars (Figure 4), it is apparent that there is a significant number of models that present similar emission levels. However, all the models at the top end of the emissions range are 4x4 vehicles.



Source: the same as for Figure 1.

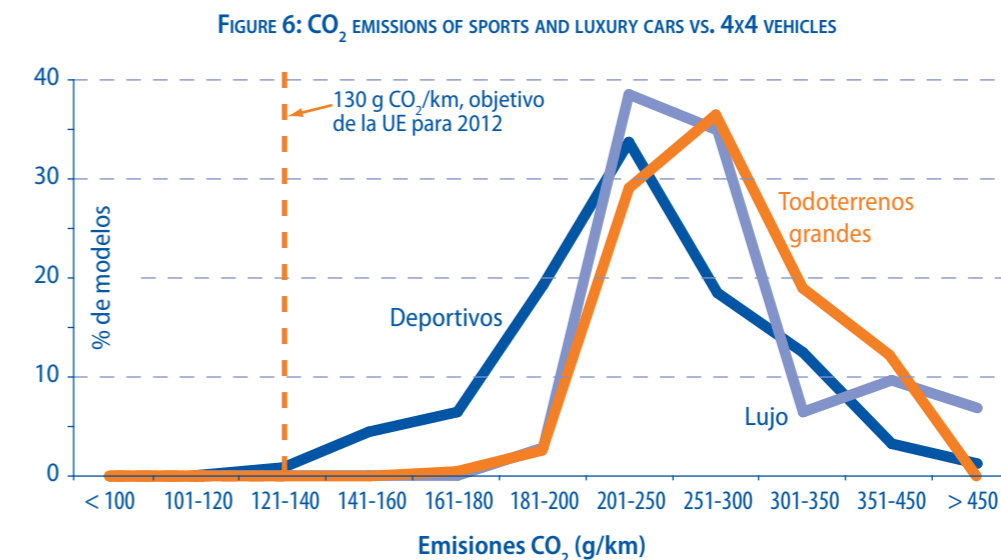
If we compare 4x4s with other big vehicles, such as people carriers, we can see that the latter are situated between the small and the big 4x4s with regard to their emission range. Moreover, the

most polluting models correspond, once again, to the category of big 4x4s, as shown in Figure 5. A similar result is obtained when comparing 4x4s (small and big) with minivans (small and big), however, the result is not shown here).



Source: the same as for Figure 1.

Finally, after comparing big 4x4s with other categories, such as sports and luxury cars (Figure 6), we come to the conclusion that the emissions levels of these categories are very similar to those of big 4x4s. This signifies that luxury cars are also an important threat to the environment, particularly given that according to latest figures, the sale of these cars is on the rise. For example, one out of four cars sold in Álava (a province in the Basque Country) is a luxury car bought mainly by businessmen and executives.<sup>16</sup>



Source: the same as for Figure 1.

The most significant fact is that while the total sale of vehicles tends to decrease, 4x4 sales are hitting the roof. It is a worrying fact that, while medium and small vehicles had fewer sales in 2006, there was a significant increase in the sales of the more polluting vehicles. Moreover, apart from

<sup>16</sup> El Correo Digital. 16-04-2007. [http://www.elcorreodigital.com/alava/prensa/20070416/alava/cada-cuatro-coches-venden\\_20070416.html](http://www.elcorreodigital.com/alava/prensa/20070416/alava/cada-cuatro-coches-venden_20070416.html)

an increase in 4x4 sales, it is also worth noting that there was an increase by almost 13% in sales of big speeple carriers. Also, luxury car sales went up by almost 12%.<sup>17</sup>

Luxury cars and 4x4s increasingly share a number of characteristics. One third of the 30 best-selling 4x4 vehicles in 2006 had the appearance of a luxury car. However, the most worrying aspect about 4x4s is that, over the last few years, sales have constantly risen. Over the last 5 years, total sales for 4x4s have not ceased to grow, and neither has their market share compared to that of other cars. In fact, it has grown from 5% in 2001, to 8.3% in 2006.<sup>18</sup> A steady rise is expected in the growth of future sales, driven by the introduction of new SUV models by standard manufacturers. These new models have the same appearance as 4x4s but without sharing their technical characteristics. In fact, this trend is evident when looking at data from 2007. At present, although we do not possess the total sales figures for the entire year, if we look until the end of November we can see that there has been a 1.9% fall in the number of new registered cars compared with 2006. Nevertheless, the sale of 136,479 4x4s recorded in the first 11 months of 2007<sup>19</sup> exceeds the record sales figures for the whole of 2006 (135,563 4x4s were sold in 2006).

**We can conclude that even if other vehicles show a worrying level in CO<sub>2</sub> emissions, 4x4s do not fare well in comparison with the rest. The most polluting models correspond to the subgroup of big 4x4s. The rise in sales of this type of vehicles makes their threat even more alarming.**

### A note about measuring CO<sub>2</sub> emissions

It should be pointed out that data on CO<sub>2</sub> emissions are an official measurement obtained through a standardised method. The Directive 93/116CE<sup>20</sup> establishes the process that must be followed in order to calculate the emissions and fuel consumption values of vehicles, which is based on the model of the test cycle previously described in the Directive 91/441/CEE.<sup>21</sup> Nevertheless, a driver's behaviour may clearly result in significant variations in emission levels. The IDAE makes recommendations in its guide with regard to the maintenance of the engine, tyres, use of air conditioning, use of gears, speed, etc. in order to save fuel and to promote energy efficiency. Recently, the authorities have begun to offer courses on *environmental driving*.<sup>22</sup>

<sup>17</sup> A fall of 2%, as it was foreseen. Antena 3, January 2007.

[http://motor.antena3.com/articulo\\_motor.php?id=3357](http://motor.antena3.com/articulo_motor.php?id=3357)

<sup>18</sup> Special 4wd vehicles (I). El Mundo, motor. 2-11-2006.

<http://www.elmundo.es/elmundomotor/2006/10/30/coches/1162210405.html>

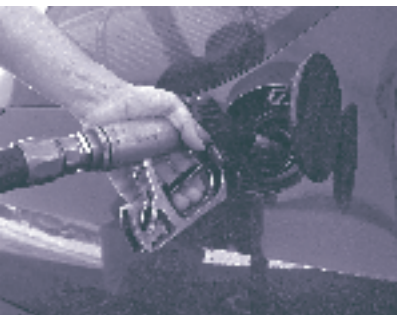
<sup>19</sup> [http://www.elpais.com/articulo/economia/nueva/fiscalidad/frena/seco/venta/coches/pequenos/elpepueco/20071204elpepueco\\_3/Tes](http://www.elpais.com/articulo/economia/nueva/fiscalidad/frena/seco/venta/coches/pequenos/elpepueco/20071204elpepueco_3/Tes)

<sup>20</sup> Directive 93/116/CE, to adapt Directive 80/1268/CEE to the latest technical progress about fuel consumption of motor vehicles. <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31993L0116:ES:HTML>

<sup>21</sup> Directive 91/441/CEE of the Council, of June 26th 1991, modifying the Directive 70/220/CEE relative the approximation of the different regulations of the Member States on measurements against atmospheric pollution produced by gases emitted by motor vehicles Directive 91/441/CEE.

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31991L0441:ES:HTML>

<sup>22</sup> "El Comisariado Europeo del Automóvil promueve cursos de conducción ecológica". Ifemamotor, 5-2-2007. <http://www.ifemamotor.ifema.es/modules/news/article.php?storyid=625>



## The impact of 4x4s on the environment

The presence of 4x4s off-road, as well as in the countryside, is a serious problem when managing Spain's natural and historical heritage. This presents an important challenge to government bodies and authorities.

In Spain, rural roads form a network of over 600,000 km that is clearly very difficult to monitor, given the thousands of 4x4s in use. These vehicles, unlike other motor vehicles that are used for sport competitions in rural areas, use these roads to create their own tracks, and very often without repairing the damage that they may have caused.

One of the damages caused by 4x4s is on the road surface, which is easily eroded by the vehicles' weight, power and tyres. This damage worsens dramatically during the rainy season, because the road becomes soft, and sometimes impassable due to the formation of deep furrows.

The problem gets even worse in the case of cattle roads (there are approximately 85,000 km of cattle roads in Spain), because 4x4s not only erode the areas where there are existing ruts, but they also damage the pasture and vegetation close to these roads. This occurs because, in general, 4x4 drivers do not stay on the existing ruts, but they drive indiscriminately over the entire road. Damage to pasture and bushes is followed by a change or even the destruction of a habitat, which is environmentally and aesthetically vital. 4x4s also damage the resources needed by grazing livestock.

The local councils that own most of these rural roads are forced to spend huge amounts of money to repair them. As they have limited financial means at their disposal, they must ask regional or central bodies for money. Consequently, public bodies have to foot the bill for an activity that is neither related to farming nor rural transport, but one that is merely related to sports or leisure.

Dust is another major problem. The erosion created by 4x4s using rural roads leads to the emission of dust particles, which can then cover the vegetation that is found near these roads. The layers of dust spoil the landscape, and most importantly interfere with the plants' ability to photosynthesise effectively.

A further problem concerns the number of animals that are run over. Rural roads often go through areas that are surrounded by stone walls, which decrease visibility and make it difficult to detect little vertebrates crossing the road. These incidents are more frequent in special periods of the year, when reproduction and the dispersion of the fauna are at their height. We must also not forget that 4x4s are usually driven by people who have a thirst for adventure, so they often drive too fast.

There are certain natural strips of land that are clearly used intensively as corridors by animals who travel along these strips, areas such as dry river beds. These areas have, historically, been used for the construction of roads and communication paths, and are thus the areas most frequented



Animals being run over, damage to tracks, to animals and plants, noise and a nuisance to others: these are just some of the problems caused by 4x4s in our countryside

by 4x4 vehicles.

The most affected groups are undoubtedly reptiles and amphibians. In fact, among the threats that affect these animals, being run over is one of the worst problems in areas where high speed road traffic is constant. This problem can lead to the extinction of an entire species, as witnessed in Great Britain and Central Europe.

Negative effects on the fauna are more noticeable on roads where traffic is intense and frequent. This leads to the absence of any fauna near this area, not because of the driving frequency but of the driving style, which is more aggressive and noisy. It also occurs because usually 4x4 vehicles are bulky and bright coloured, so they disturb the natural colours of the environment.

An additional negative effect on animals in a rural area is related to the noise pollution produced by 4x4s. The noise made by these vehicles, especially during particular periods of the year, such as holidays, disturbs the animals and can induce stress. Some species are more sensitive to human presence, and may realise that 4x4 vehicles are connected to human presence. Consequently, they may abandon these noisy and disturbed areas. A lot of field studies show that birds are most sensitive to noise pollution, and thus most likely to be affected in their territorial behaviour.

A further effect relates to the historical and cultural damage caused by these vehicles. Many rural roads in Spain are covered by ancient Roman or traditional roadways. The traffic of 4x4s, especially during the rainy season, leads to the stones being broken or loosened. Ancient Roman or traditional bridges are often found on these roads at the point where the road must cross a river. These bridges were not designed to bear the weight of a 4x4. Thus crossing them using such vehicles could lead to damage.

Finally, another effect is the constant conflict of interests with other users of these roads who do not drive motor vehicles, such as shepherds with their livestock, walkers, cyclists, people riding horses, etc. A 4x4 vehicle passing by at high speed - especially in a convoy - may scare livestock, thus making the job of the shepherd harder. There is even a potential threat of running over the cattle, as well as the shepherd. The risk of an accident, the noise, the dust and the general discomfort created by 4x4s contribute to other users not being able to experience the peace and quiet of the countryside.

All these negative effects worsen if the driver of the 4x4 decides to drive off-road. The damage on the vegetation is worse, especially in areas where the density and fragility of the botanical species is higher. Moreover, when vehicles randomly travel off-road during the animals' reproductive season, they increase the risk of animals abandoning either their nests or lairs with the consequent death of their offspring. Another problem linked to driving on hillsides is that of erosion, which worsens in the very steep areas and in particular when the weather conditions are extreme, such as heavy rainfalls.

Finally, the presence of 4x4s in rural areas during the forest fire season increases the likelihood of a fire. Fires may be the result of sparks coming from the vehicles, due to the emission of flammable gases or when a heated element of the vehicle comes into contact with vegetation.

It should be noted that most of the aforementioned negative effects on the environment are also attributed to the increasing presence of other vehicles, such as motorbikes or quads.



## The 4x4 legal framework in rural areas

The use of 4x4s in rural areas is regulated by many national, local and regional laws, and in certain cases, by a law that applies to some of the 700 protected sites in Spain.

### National regulations

These include the general laws that operate throughout Spain. The main regulations applicable to 4x4s are the Biodiversity and Natural Heritage Law (42/2007); the Forest Law (Law 43/2003) and the Law on Cattle Roads (Law 03/1995).

Due to its character, the Biodiversity and Natural Heritage Law does not refer to the desirability and need to regulate the use of 4x4s in the countryside. However, it clearly establishes the guiding principle of the regulation, namely "the correct use of resources in order to guarantee the sustainability of the Natural Heritage, with regard to animal species and ecosystems." On its side, the Forest Law (43/2003), in its Article 54b on *Public Access*, establishes that "Driving motor vehicles on off-road forest trails shall be limited to general staff, Forestry and Agricultural Management staff, as well as Public Administration patrol staff and firemen. Under exceptional circumstances, the Forest Administration may give right to free transit."

The Law on Cattle Roads (Article 16, *Compatible Uses*) states that "under exceptional circumstances, and for a specific use, the Regional Authorities may give authorisation to non-agricultural motor vehicles, except when [...] these roads are in use by migrating livestock or for all roads that are of special environmental or cultural interest." The Law also states that the roads may be used for "walking, riding and other non-motorised forms of transport, as long as they give priority to livestock."

Recently the Ministry of Agriculture made a proposal to restrict the access of 4x4 vehicles to rural roads, which was later withdrawn.<sup>23</sup>

### Regional regulations

There is an extensive set of laws that establish and limit the use of 4x4s in the countryside. The forestry regulations in some regions dedicate a whole chapter to the public use of forests and establish general rules to guarantee proper management and conservation of forests.

<sup>23</sup> "The Agriculture Ministry wants to forbid transit of 4wd vehicles in all rural trails". El Mundo, February 2007. <http://www.elmundo.es/elmundomotor/2007/02/06/seguridad/1170746024.html>



Some Spanish regions have specific laws which regulate the use of motor vehicles in the countryside

This is the case in Andalusia. In the 1987 Council Order, which was later developed in the 1992 Andalusian Forestry Act, it is stated that “the driving of motorcycles or cars in forest areas is forbidden, whether off-road, on firebreaks, on roads used for timber extraction, on cattle roads, or on dry or flooded river beds. In general, these cars should stay on roads made for the use of motor vehicles, unless it is essential that they make use of the roads in connection with the forestry industry.”

The region of Aragon, in its forestry regulation, Law 15/2006, of December 28th, similarly states the following: “Unless for management or surveillance reasons or with a previous official permit, it is forbidden for motor vehicles to veer off the existing forest roads and to drive cross country.” On the use of forest trails, it adds that “Driving motor vehicles along forest trails shall be limited to those involved in the management and surveillance of these areas.”

Other regions have specific laws in place in order to control traffic and use of motor vehicles in rural areas, such as in Castile-La Mancha, where Decree 63/2006 of May 16th regulates the recreational use, parking and driving of motor vehicles. It “generally prohibits people from driving off-road or on roads that are not authorised by the regional ministry with responsibility for this matter. It also forbids people from driving through areas of geomorphological interest or specially protected habitats as specified in the Nature Conservation Law 9/1999, of May 26<sup>th</sup>.” Moreover, it specifically prohibits “driving cross country on non paved roads that are less than 2 metres wide, on firebreaks or forest trails, and on river beds or lakesides.”

Another example of regulation of motor vehicle traffic in rural areas is the specific regulation of the region of Navarra. Decree 36/1994 of February 14th regulates motor sports, as well as the driving of motor vehicles in non urban areas. It also states that 4x4 and motocross vehicles may be driven on this kind of terrain, as well as on terrain that belongs to Nature Reserves, cattle roads, river beds, etc, if the activity is organized and has the required official permits. However, the unrestrained use of motor vehicles is forbidden “cross country, off-road and on roads that are less than 2 metres wide, on fire belts or trails used by the forestry commission to transport wood. Driving is not permitted on roads that have been specifically forbidden by the Authorities.”

Another important set of laws controlling the use of 4x4 vehicles in rural areas is the wide and varied regulation that limits the use of motor vehicles in public trails and cross country.

Firstly, it should be pointed out that rural roads are mentioned in the chapter relative to competencies in most of the Regional Statutes of Autonomy (17 in total), as well as in the Statutes of the Autonomous Cities (2 in total). This chapter sets out that each region has sole competency on the issue when the path is entirely within its territory.

STATUTES OF AUTONOMY AND COMPETENCIES OVER RURAL ROADS

	Article		Article
Andalusia	13.10	The Balearic Islands	30.5
Aragon	35.1.9	Madrid	26.1.6
Asturias	10.1.5	Melilla (Autonomous City)	21.1.3 <sup>a</sup>
Cantabria	24.6	Murcia	10.1.4
Castile-La Mancha	31.1.4 <sup>a</sup>	Navarre	49.1.f
Castile y León	32.1.4 <sup>a</sup>	Valencia	31.14
Catalonia	9.14	The Basque Country	10.3.4
Ceuta (Autonomous City)	21.1.3 <sup>a</sup>	Rioja (La)	8.1.15
Extremadura	7.1.4		

Source: Regional Statutes of Autonomy

The most striking law that regulates cattle roads is a state-wide law, although the regions are wholly responsible for its implementation. Two different models exist. The first model states that two regions (the Basque Country and Navarra) have administrative control over the law. The second model states that the remaining regions must share responsibility on this matter with the central government.

There are five regions that are yet to develop their own laws to protect cattle roads, although some of them have drafted bills or are in the process of drafting. Such is the case in the regions of Catalonia, Valencia and Castile- León.

In the case of Aragon, the Law 10/2005, of November 11th, on Cattle Roads, establishes the following points:

- ▶ Farm vehicles and machinery being used for agricultural purposes may be driven along these roads, but livestock must always be prioritised.
- ▶ Under exceptional circumstances and when the road is situated entirely within its territory, the relevant administrative body may allow some motor vehicles to use this road: namely, vehicles being used by cultural or educational establishments based on the countryside, or other vehicles that are not being used for sport.
- ▶ All motorised travel must avoid destroying vegetation and pasture along cattle roads. Cars must be driven at an appropriate speed and must give way to migrating livestock, which must not be thrown off course or interrupted in any way.

Castile-León also passed a bill to regulate sporting activities and the driving of motor vehicles in forests and along cattle roads. The decree implemented by the regional government of Castile y León (Decree 4/1995), regulating the aforementioned, reads “Motor vehicles may only be driven along roads and wide tracks in forests, and are not allowed to be driven cross country or along small roads.” It also adds that “the regional ministry of the Environment and Planning may use signs to prevent motor vehicles from driving along roads whose use would have an adverse effect on areas of special beauty, or on areas of particular environmental value.”

## Local regulations

Town councils and other local bodies may also legislate on the use of motor vehicles on public roads and in rural areas. The following laws are of particular importance: Law 7/1985, of April 2nd, which establishes the importance of the regional laws; the RDL 781/1986, of April 18th; the RD 1372/1986, of June 13th, and the Regulation of Regional Goods and Bodies. The powers of municipalities usually consist of by-laws.

However, at present, most local councils do not have such by-laws. Some do exist, such as nature conservation and patrol, control of the use of motor vehicles, conservation of public and private roads, etc.

One of the pioneering by-laws that has become a reference point for the rest of the country was passed in Sigüenza (Guadalajara). This local council by-law - which regulates the use of motor vehicles in the countryside as well as in the town of Sigüenza and its suburbs - forbids driving cross country, through paths and trails, and sets a maximum speed of 30 km/h in the allowed rural roads<sup>24</sup>.

## Other regulations

### Regulations to prevent forest fires

Regional governments consider the driving of motor vehicles along forest roads and trails as a high-risk activity that needs to be prohibited or curtailed.

One such example is the Order of May 18th that restricts the use and access to forests and their surrounding areas in the period between June 1st and October 15th 2007. This Order forbids the use of motor vehicles during that period, whether “off-road, cross country, on river beds, cattle roads and forest trails used by lumberjacks”.

<sup>24</sup> Council Order for the regulation of the transit of motor vehicles in the environment, in Sigüenza and surroundings. B.O.P. de Guadalajara nº 154, 24-12-2004. [http://www.ecologistasenaccion.org/IMG/pdf\\_ORDENANZA\\_SIGUENZA.pdf](http://www.ecologistasenaccion.org/IMG/pdf_ORDENANZA_SIGUENZA.pdf)

### Tourist sector regulations

Sometimes, regional regulations also set out measures on the use of rural roads and on nature conservation. The Andalusian Order 20/2002, of January 29th, relating to Active and Rural Tourism is of special interest. Chapter II (Section III 'Active Tourism') establishes the regulation on the use of trails and roads, highlighting the cooperation between the regional Ministry for Tourism and the regional Ministry for the Environment in order to promote the Andalusian Network of Designated Routes.

### Regulations on handling and preserving wild fauna and flora

This is an additional regulation that applies to significant areas that concern specific species. Usually these cases need special measures in place in order to manage the use of motor vehicles.

Such is the case of the Plan to Recover the Iberian Imperial Eagle in Castile- León (Council Order 114/2003, of October 2<sup>nd</sup>). This forbids "organised leisure activities with quads, 4x4 vehicles, motorcycles or bikes in the period between February 1st and August 15<sup>th</sup>."

### Specific regulations relating to protected natural areas

This section focuses on the regulations relating to the use and enjoyment of Protected Natural Areas that enjoy a special degree of protection. Regulations on the use of 4X4 vehicles vary significantly, and in most cases they do not even exist.

This situation arises due to the time lapse between the moment these areas are declared protected, and the moment when the bill concerning their management is passed. In most cases, this lapse in time may be longer than five or six years, and it may even reach ten years. Within the few protected areas that have specific regulations in place, there is a certain lack of coherence between the standards set out for zoning, intensity and frequency of use, etc.

Different methodologies have been used in the planning of these areas, though the starting point is the Spanish Plan for the Land Use of Natural Resources (PORN, in Spanish). This regulation is a planning tool that defines the state of conservation of the resources and ecosystems, and decides on the regulations needed to guarantee the conservation of this natural environment. The Steering Plan for Use and Management (PRUG, in Spanish) is the tool that establishes the general regulations as to the use of the Protected Natural Areas.

Both the PORN and PRUG plans sometimes refer explicitly to the problems associated with 4x4s in the environment; the use of 4x4s is sometimes forbidden or limited depending on zoning policies. However, it would be better if the planning for such environmental use was included in the Public Use Planning (PUP) of each protected area. According to the reference frame set out in the management plan, the PUP regulates all permitted activities precisely.

The problem is that most protected areas need a hands-on management and should have strict regulations in place regarding the most destructive activities (including 4x4s). Amongst the protected areas that have a PUP, the problem of 4x4s is handled very differently depending on the region, the degree of impact on the environment and the amount of work required in the planning and managing of each distinct protected area.

In order to discover the limits of 4x4 usage in protected areas we have analysed each specific regulation based on its own planning documents. We have trawled through all the relevant planning regulations relating to protected areas in Andalusia, Aragon and the Balearic Islands.

The results are worrying and uncertain. On the one hand, there are many protected areas in Spain without any basic planning tools, such as PORN or PRUG. Some protected areas have basic planning tools, which are not properly defined. Frequently, the general analysis of these situations does not even mention the problems associated with the presence of 4x4s.

However, the regulations in some protected areas point out that motor vehicles pose a major threat to fauna and flora, and have thus established a series of measures to control the situation.

Most protected natural areas have no specific regulations or planning guidelines about 4X4s

We present below some examples of protected area regulations:

#### Parque Natural de la Bahía (Cádiz)

<b>PORN</b>	The general public is profusely forbidden to drive motor vehicles along non paved roads that are less than 2 metres wide, river beds and cross country.
<b>PRUG</b>	4x4 vehicles are not mentioned.
<b>PUP</b>	4x4s are acknowledged to be a major problem, but no measures have been thought out for their removal. Promoting activities to preserve the environment is considered.

#### Parque Natural de Cazorla, Segura y Las Villas (Jaén)

<b>PORN</b>	The regulations are too general.
<b>PRUG</b>	There is no regulation on 4x4s. However, hotels, restaurants and other tourist establishments are regulated.
<b>PUP</b>	There is no PUP.

#### Parque Natural del Moncayo (Zaragoza)

<b>PORN</b>	Car, motorbike and bicycle races are forbidden in the park. Motor vehicles are forbidden on all roads, trails and cattle roads.
<b>PRUG</b>	Traffic of any kind is only permitted on asphalt. It is forbidden to drive a motorised vehicle in areas of restricted use and 'shared' use.
<b>PUP</b>	Pending approval.

In other cases, such as in the Basque Country, the regulation on the use of 4x4s is generic, as it is established in the Order applied to all protected natural areas. The Forests and Management of Protected Natural Areas Order 3/2007, of March 20th, says that "All vehicles must respect the environment, as well as the rights and goods of the owners of the land [...] Maximum speed is set to 30 km/h [...] Driving or parking is only permitted on the roads or places designated for such use."





## Advertising and 4x4s

### The advertising of 4x4s

In 1900, the first car manufacturers in the United States produced 2500 cars. Twenty years later, thanks to the introduction of mass production by Henry Ford, almost two million cars were being manufactured each year.<sup>25</sup> The car was the catalyst for the most important innovation in the production of consumer goods; nowadays, and operating in a very different business environment, the car industry is the largest manufacturing industry worldwide. With an advertising investment of 566 million euros in 2005<sup>26</sup>, the car industry is Spain's leading advertiser. In the USA, 1000 dollars are spent in the advertising of each vehicle sold.

Looking at the sector's data, advertising is the key to the success of the car industry. The increasing importance of 4x4s in this market is reflected by its advertising presence.

Until the 70s, 4x4s were rarely advertised. They were targeted at a very specific clientele. Advertising focused on saloon cars, the sales of which increased due to the rise of the middle class. When Land-Rover, a pioneer car make in Spain, advertised its 4x4 vehicle, *Santana*, it mostly emphasised the specifications and utility of the car. "For an all-terrain country, an all-terrain vehicle," said the slogan of the advertisement, thus targeting those who worked in the countryside.

In the 80s, Japanese makes moved into the 4x4 market, and promoted the idea of a powerful and aggressive 4x4. "It doesn't have horsepower, it has beast power," said the Nissan Patrol advert, which had an impressive-looking lion on the boot of the car. In 1990, a TV advert for Suzuki Vitara, a rejuvenated model of an urban car based on the Jeep, adopted a different strategy. In the ad, a small and cute 4x4 car travelled across the deserted, cold streets of Berlin, with the soldiers of the Democratic Republic of Germany in the background. "Winds of freedom, the Vitara is born. Freedom of movement, freedom of action. Vitara: a free life, a free city." The advert, which ended with the car crossing the wall violently, became the symbol of a recent, though still slow, diversification of the market for 4x4s and of its new target: a select, urban and young clientele.

During that time, adverts for these cars had timidly moved on from specialist car or hunting magazines, and were competing with car adverts in newspapers and supplements. This change was also noticeable on Spanish television where, in the early 90s, an advert showed the driver of a Mitsubishi Montero meeting a quaint shepherd isolated from the rest of the world. "Are you saying that Mateos is chasing a former minister disguised as Superman and that he is married to

<sup>25</sup> José Rodríguez de Rivera: El Fordismo. 1999.

<sup>26</sup> Infoadex 2006.

a Chinese woman? What does Franco think of that? Oh! I forgot... you told me Franco had died..." The brand is still using the successful slogan which influenced all 4x4 adverts: "A Montero will take you to places that no one has been to before."

The plot used in the advertisements of these vehicles has shifted from highlighting the technical specifications (4 wheel drive, suspension for difficult terrains...) to using strategies similar to those adopted for the advertising of luxury cars. Since the 80's, the most successful storyline used in the advertisement of 4X4s is the quasi-mythical representation of the globe-trotting adventurer, nowadays increasingly embodied in the businessman escaping from the city to find exotic landscapes. 4x4s symbolise freedom (mainly for the male of the species), as against the monotony and stress of the city. It is not surprising to see that 4x4s play such an important role at weekends, as they are used to reach country homes, or for other open air activities, such as hunting or adventure sports.

However, the increasing presence of 4X4s has meant that the makers have been forced to diversify their strategies in a bid to achieve product differentiation. The adaptation of these vehicles to different sectors has led to a range of advertising strategies being adopted, strategies which had previously been used to advertise luxury cars, sports cars or large saloon cars. In other words, 4X4s are now a dynamic element of the advertising industry and, therefore, play a major economic role in the media.

### Advertising, a money-making communication machine

Advertising played a minor role before the Industrial Revolution. Since then, it has gained a remarkable prominence in the media. Our new economy demands the creation of a consumer's market for mass-produced goods, and advertising is the key. Its economic role is to make communication profitable.

The car industry in the USA invests 17 billion dollars in advertising, which represents 25% of its total investment<sup>27</sup>. For years, the car sector has been one of the leading sectors in advertising investment worldwide. Aggressive commercial competition means that in the last 20 years advertising investment of the car industry has grown by 1,378%, while sales have only grown by 17%. Thus the advertising cost of each car being sold has increased from 50 to 1000 dollars in two decades.

Due to this frantic promotion and the aggressive growth in advertising, the public has started to reject the constant interference of ads in their life. The advertising sector has therefore adopted different strategies such as subliminal advertising (product placement and the like) or misleading audiences as to the purpose of the information, which is forbidden by the Advertising General Law. Nowadays, it tries to influence in a more subtle way, taking advantage of the emotional bonds that it has with the public and potential client.

In the case of TV ads, the remote control was a liberating element that offered a potential control on what we see. However, the media can not permit such thing to occur due to financial reasons. So, product placement and other new marketing techniques were developed to make us watch advertisements without even noticing it. Television channels and film producers know exactly who foots the bill. "We must find new ways to justify the rise in costs, like short ads or maybe reach an agreement with the advertisers so that they contribute to the scripts [...] Advertisers should have the chance of writing scripts, and TV channels must give more if we want to demand higher costs," says Eduardo Olano, General Director of Atres Advertising<sup>28</sup>.

Given an environment that promotes the managing the public for commercial reasons, there is no sign that we are moving towards a more independent-minded and critical spectator, but quite the reverse: advertising is constantly moving away from its informative role. Instead, it is specialising

<sup>27</sup> Xtreme Media Digest Europe: 2006 Report.

<sup>28</sup> Eduardo Olano, General Director of Atres Advertising (advertising agency of the TV channel Antena 3 TV). Infoadex 2006.

Since the early 80s a particular discourse has increasingly been used to advertise 4X4s: this promotes the myth of the globetrotting adventurer, usually portrayed as a business man fleeing from the city in search of exotic, unexplored places

in achieving an emotional connection with the consumer and is focused on the goal of making the media profitable, forcing the content to be subjugated to commercial interests.

## The 4x4 under the microscope: advertising and social patterns

A long time ago the car changed from being a simple method of transport to becoming one of the most essential icons of the individualistic and hedonistic culture of our society. On the one hand, it is a true reflection of our system of public transport. On the other hand, it is the consumer product par excellence when it comes to summing up the complex process of creating needs and desires in the consumer.

If one takes into account the serious impact of motorised transport on our lives and environment, it is difficult to understand how advertisers can portray the car in such a positive light. Advertising, in pursuance of its main goal to secure sales, has created a discourse which exaggerates the car's most desirable and, by now, commonplace qualities, whilst failing to point out those which are most detrimental.

We have already emphasized that the image that the advertisers project, and which contributes to the social image of the car, costs a lot of money. For that reason, each brand tries to be different from the rest, emphasizing its specific qualities, whilst at the same time showing off its most attractive common characteristics. The differentiation techniques of each product result in creating a highly idealised image of the overall product; above all, it is the sum of the homogeneous elements of each product which creates the total picture, an image based on clichés and on the endless reiteration of the apparent advantages of the car.

In this reflected image, as if it were a media mirror, advertising focuses on consumers with more precision according to the type of product they consume. Family cars, for example, are seen driving along permanently empty highways, located in idyllic and evocative landscapes. In television ads, the car's smooth, slow motion movement permits the viewer to think of various happy family scenes taking place in its interior. The safety and comfort of the product are heightened with soothing music or a lilting rhythm. For cars aimed at younger people, the scene is usually that of a city recreated to look exactly like a shopping centre, and the accompanying music is a hit that is then endlessly played on the most commercial radio stations.

However, for 4X4 ads they use exotic landscapes, and the car is driven in a more aggressive style than in the case of the family model. In order to indicate the adventurous nature of the product they frequently refer to rallies, safaris or adventure sports. For example, the Dakar rally has become a media event that praises the power of these vehicles to cope with the most difficult circuit: we are shown a wild, idealised landscape which includes all the right ingredients (enormous sand dunes, windy irregular roads, desert mountains...).

In spite of the mainly urban use of 4X4s, the marketing strategy continues to make the most of this romantic image of motorized adventure. Even the names of the models centre round the idea of strength (Daihatsu Feroza, Land-Rover Defender, Suzuki Samurai, Tata Sumo...) or of intrepid journeys (Ford Explorer, Nissan Pathfinder, Land-Rover Discovery, Opel Frontera, Tata Safari...). However, as 4X4 vehicles have become specialized cars (luxury people carriers, four wheel drive saloon cars, sports pick-up...), the ads have also introduced the notion of the city as another form of wild space: "The city can be the perfect place to test yourself if you are driving the right car", as the 4X4 Opel Antara's ad states.

So in today's ads, what separates a driver's small house from his office block is a peaceful river rather than a raging torrent in a tropical jungle. In the Nissan X-Trail advert, a business man transports his car on a raft: "Never lose your spirit!", says the advert. The metaphor that compares the modern city with a jungle highlights the competitiveness and the demanding pace of the business world, but the role of a 4X4 in the city cannot be justified so easily: the aggressive businessman doesn't need to use tough driving techniques in the city but in the countryside, and yet this is

where he goes at the weekends in search of rest and peace.

The final twist in this trend of vehicles are the urban models which are hard to classify though they are clearly targeted at a young audience attracted to these cars' aura of adventure: "¿A saloon car, an SUV, a 4X4? The new Nissan Qashqai does not clearly fit into in any of these categories, but is a crossover of the three types of vehicle. It offers the dynamism of a saloon car, the comfort and space of an SUV and the bodywork and traction of a 4X4 vehicle"<sup>29</sup>, according to the magazine Supermotor. And this was about a car that is advertised, in a background full of graffiti-filled walls, as "100% Urbanproof. Designed for tough urban life".

The city-forest simile reaches levels of exaggeration that are almost absurd, and even damage this make of car's politically correct image. The Association of Media Users (AUC, in Spanish), for example, recently denounced the trend "to show situations of risk and overly spectacular images in the advertisement of automobiles" and asked the Department of Transport, the Secretary of State of Telecommunications and the Society of Information to withdraw the Ford Ranger and Opel Antara ads: in these, 4X4s are driven over city roofs or in a flood. According to the AUC, the ads give a positive vision of reckless driving, "despite the fact that Spain's high toll of traffic accidents is often due to the very same reckless driving and speeding". The AUC also points out that the Traffic, Transit of Motor Vehicles and Road Safety Law prohibits, in its article 52, "the advertising of motor vehicles that in any way – through the written word or speaking, through sound or images – incites people to drive fast or recklessly, leads to dangerous situations or any other circumstance which goes against the principles of the law; it also denounces any advertising which may induce in drivers a false or unjustified sense of security"<sup>30</sup>.

There is no doubt that advertising has the ability to pick up on our social habits, models and aspirations and to refashion them as commercial messages. For that reason, publicity ends up being the result of a precise selection of the image that the advertiser wants to project, a mixture of mimicry and aspiration: consumers identify with the models that the ad shows because they were chosen precisely for their closeness to the consumer, but they also aspire to acquire the difference that separates them from the advertised product. The reflection of the car in the mirror is that of an image built by eliminating all the negative environmental, functional and social repercussions of the product whilst exaggerating the benefits it offers to the consumer.

This model of a car consumer which is so dependent on the aspirational dimension offers advertising an essential role when it comes to transmitting values and promises which will translate into sales. There is no doubt at all that they are helped in this by the present trend for affective publicity (advertises which pull at our emotions)

## The 4X4: an emotional 'must-have'

Nowadays, advertising has nothing to do with ideologies: it tries to fit its audience like a glove. Above all, it no longer aims to only sell products. It has adapted, once again, to the needs of the big companies that use advertising, and has offered them as a result a set of marketing and advertising techniques that specialise in making products irrelevant, as long as they carry the right brand.

In this stage of consumerism that economically developed societies are going through, companies are no longer interested in manufacturing products, but in manufacturing brands. In her work *No Logo*, Naomi Klein explains that the manufacture of products is a troublesome process, and for this reason the companies try to subcontract it and to externalize the process so that they can focus on brand creation, a more profitable activity in this image-conscious age.

The sense of prestige, as well as feelings of approval and admiration... that advertising manages to make us associate with a brand all work on our emotions. The trend to put to one side advertising's traditional role as a provider of information is a profitable one, because critical consumers select

The image of the car portrayed by advertising does away with all the negative environmental and social uses of the car whilst at the same time exaggerating all its positive assets

In the United States, advertising costs for each car sold have increased from \$50 to \$1000 in just two decades

<sup>29</sup> Sara Soria "Nissan Qashqai: Un turismo con carrocería 4x4", Supermotor.com 29-01-2007.

<sup>30</sup> Royal Order 339/1990, of March 2nd, regulating traffic and transit of motor vehicles and road safety, revised in the Order 19/2001, of December 19th.

4X4s are the latest whim for urban dwellers who are not just looking for a means of transport; in the last few decades these vehicles have presented themselves as an option which combines the prestige of a particular make of car and its imagined ability to adapt itself to any purpose or place

the products that they consume on the basis of price, quality, origin, production methods... whereas brand-loyal clients just buy.

The strategy of the better positioned automobile brands is clearly represented in BMW's successful slogan: "Do you like driving?", because omitting the product's function allows for a new affective relationship between the client and the automobile, a relationship which constantly stresses the importance of a whim, to the point that even a convertible seems necessary: "From whim to could see yourself with the wind on your cheeks, while everyone else observes you aloof with a twisted glance. You could think that you have yielded to your more hidden passions. But this time, your emotion can be measured mathematically and the feeling of guilt is borne off by the wind", says a recent ad for the Peugeot 207CC. And consumers, increasingly demanding and capricious, move from the compulsive purchasing of a chocolate bar to that of a car: "You are in the sports store. You can't decide between a new wood 3 or a tennis racket. Who do you consult? Nobody. You take them both and that's it. Without a doubt, you are going through the best moment of your life. That is why we offer you the maximum safety in all the Renault Laguna cars", said an ad in the newspaper El País.

4X4s, the new whim of the urban consumer who is not just looking for a means of transport, have arise in the last few decades as an option which combine brand prestige and its vaunted adaptability to any scenario. In fact, as its role on difficult circuits is normally anecdotal, most of these enormous vehicles have become multi-purpose Sport Utility Vehicle models (SUV), where the equipment and the ability to move comfortably along motorways is valued more highly than its performance in the countryside and on the mountains.

Meanwhile, advertising focuses on the ego-centred side of the consumer and makes a point of presenting 4X4s (that, on average, cost about €30,000) as yet another market whim. "Release the individualist that is inside you", says an ad for the Cadillac SRX Crossover 4x4.

These marketing techniques have accompanied the spectacular growth in the sales of 4X4s and their role in the next years is expected to be more ambitious. Advertising specialists Pablo Muñoz and Jose Martí argue that advertising is putting all its emphasis and effort into "creating new experiences, new surroundings in which to experience brands and products as they have never been experienced before. These will be experiences that focus not only on how the consumer experiences the product, but also on how he experiences the consumption itself. The brand, as well as providing consumers with particular products or services, tries to connect with their interests, motivations and life styles and, in short, with every aspect related to symbolic consumption (i.e. with factors that carry an added symbolic and emotional value and which means that consumers fall for a brand that causes, finally, that the consumer consumes the brand for reasons that have nothing to do with its tangible characteristics)".

These are apparent benefits which are purely emotive ones based, for example, on the sense of prestige which a particular brand has. Thus, whereas 44% of Spanish car buyers have chosen having in mind what is offering that model of automobile, a 30% made a choice giving more importance to the brand<sup>31</sup>. The more exclusive is the car, the more importance has the brand in the purchase decision. It is the case of the of luxury sedans, the sports cars and, mainly, of the 4X4 vehicles. It has been calculated that 43% of the buyers of 4X4 vehicles choose the car based on the brand, whereas only 33% do it thinking basically on the characteristics of the model.

## The 'green' car

The past 28th of October 2006, something rare happened in major newspapers. Great part of the advertisements in the pages of El País, El Mundo or ABC showed an idyllic image of the new large construction and real estate company Acciona. The campaign, with the slogan "Pioneering developing and sustainability", was presented to mass media like a landmark in the history of advertising by its ambitious omnipresence. What was not so novel, nevertheless, was the advertising strategy: the every time more habitual green-washing of the transnational companies.

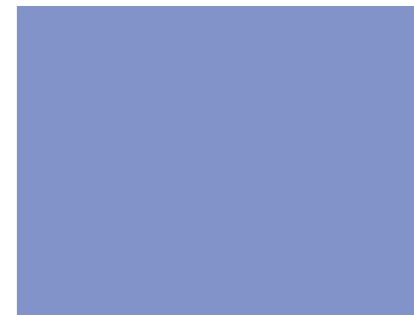
In each one of the ads, Acciona reminded the environmental and social commitment of the new company, when it is a company that is dedicated to the construction of great infrastructures of transport, as well as to the real estate operations, management of urban services and generation of energy. Again, one of the companies that are fomenting more the present model of overproduction and overconsumption appears like a champion of the environmental protection. In the same line, an ad of Iberdrola assures that "every time that you use the dryer, a meadow will fill of flowers".

Thus, the fashion of the ecology also reaches one of the most polluting consumption products, the car. Using the World Day of the Environment of 2007 as excuse, the automobile manufacturer company Audi published in the press an announcement for "promoting the protection and the respect for the environment". In the ad can be seen the photography of a forest with a cigarette burn and the slogan: "Sometimes, the man leaves indelible memories in the nature".

The ad is part of a "social initiative of Audi" called Attitudes, an ambitious program within the so-called Enterprise Social Responsibility. But a change of attitudes should be structural; it should go beyond certain particular environmental catastrophes that have little to do with the use of the automobile and it should be focused in the mid term modification of a whole transport model that is socially and environmentally unsustainable.

In the case of the 4X4 vehicles, the images of those hidden and solitary natural paradises that they colonize turn out to be as sweetened and artificial as the supposed freedom that offers. It is an idealized and slanted projection of a wild Nature that would test the car and that insists on the enterprising and adventurous spirit of the consumer.

There is no secret in all this. The trick is to invest a good sum of money in creating and polishing a sometimes totally skilful image, and the reason is clear: the environment sells. Thus, in spite of the large size and weight of the 4X4 vehicle, that turn them out in one of the most polluting and spendthrifts of energy and materials vehicles, it is foreseen that in the coming years we will see an advertising that operates to the maximum the idea of power efficiency and environmental responsibility: the idea that this one is the type of vehicle thought for the lovers of the nature.



31 Iceberg Media: "Estudio Cars and Ads", in *El Publicista*, extra 2005.



## Production and sales of 4x4 vehicles

### Brief history of 4x4s' mass-production

In the 1940s, the US army decided to use a new type of light vehicle during World War II, and Ford's assembly line was in charge of making more than 700,000 Jeeps, which was a small vehicle with traction on all wheels and two gears. The "Jeep" brand was registered in 1946 by the Willys-Overland company; winner of the competition organised by the US army, which then began to manufacture these cars for civil use. Meanwhile, the British Land Rover had also begun to make 4x4s for Europeans.

Although the first models designed for civil use were mostly bought by people who worked the land, at the beginning of the 60s Jeep presented a luxury model, the Jeep Waggoner, with automatic gears, independent front suspension, assisted direction and a six cylinder engine. This was in fact a demonstration of this vehicle's commercial possibilities in an increasingly diversified market that was driven by trends, like other consumer products.

At the beginning of the 70s, the two rival car manufacturers produced two key models in this evolution, the Range Rover and the Jeep Cherokee. The process of diversification began in the 80s with the pick-up truck and the 4x4 vehicles of urban and youthful appearance. Furthermore, in the 90s, prestigious car manufacturers like BMW, Volkswagen and Mercedes, as well as Asian car manufacturers like Nissan, Toyota, Mitsubishi and Suzuki introduced their 4x4 models onto the market. Although Japanese and American brands have a long tradition in this sector, the Koreans have recently appeared on the market with lower prices. European makes have also begun to make inroads into the market, firstly with the upmarket 4X4s, but since then with all other 4x4 sectors.

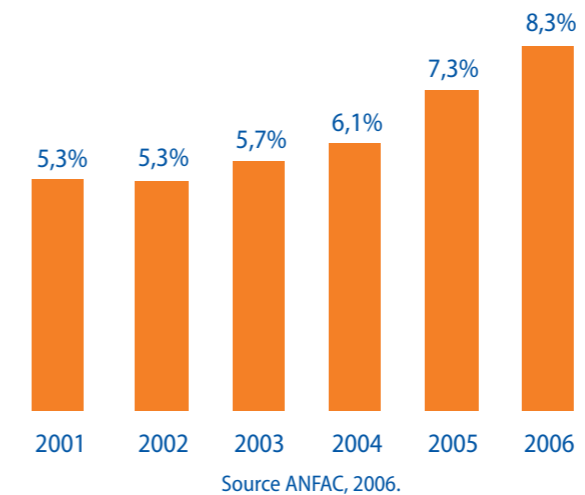
Over the past decade, the increasing segmentation of the 4X4 market has been spectacular due to the appearance of different models, adapted to a whole variety of uses. Even manufacturers largely focused on the production of saloon or estate cars, such as Seat or Citroën, have also created all-terrain, urban variations of the classic 4x4. According to a recent article in the magazine El País Motor, "The light 4x4 vehicle continues to gain followers among European families."<sup>32</sup> "They are not the most energy efficient cars, as their bulky bodies count against them as regards weight and aerodynamics. However, they have adapted very well to new lifestyles and outdoors activities because they offer an interior capacity and flexibility similar to those of large people carriers. Moreover, they are perfect for off-road trips."

32 "Todoterrenos light", El País Motor, 2-6-2007.

## Spanish 4x4 vehicle industry

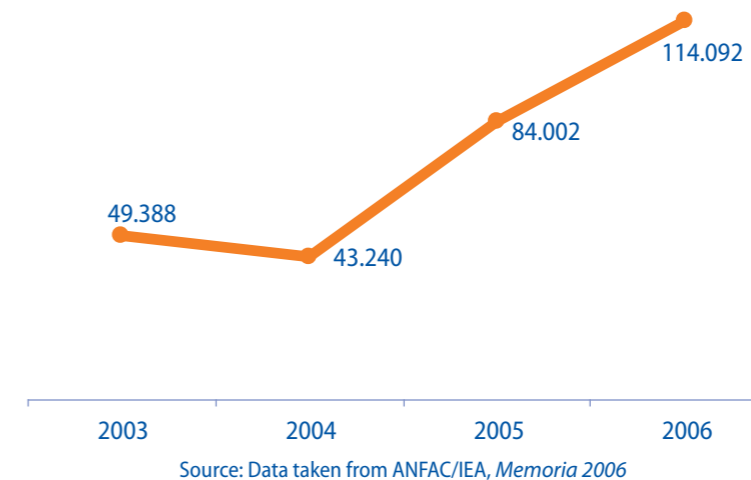
Car production is a key sector of Spanish industry. It contributes 8,4% of the total gross domestic product, 7% of all industrial jobs and 26% of all exports. The production of 4X4 vehicles has seen a significant growth in recent years, with an increase of approximately 36% in 2006. In the year 2001, these vehicles represented 2% of total car production whereas they now account for 4% of overall production and 7,75% of all vehicle sales. While overall car production decreased by 6% since 2001, the production of 4x4 vehicles increased by 87% in this same period<sup>33</sup> (see Figures 7, 8 and 9).

FIGURE 7: RATE OF 4x4 VEHICLES SOLD WITH REGARD TO THE TOTAL NUMBER IN CAR SALES.



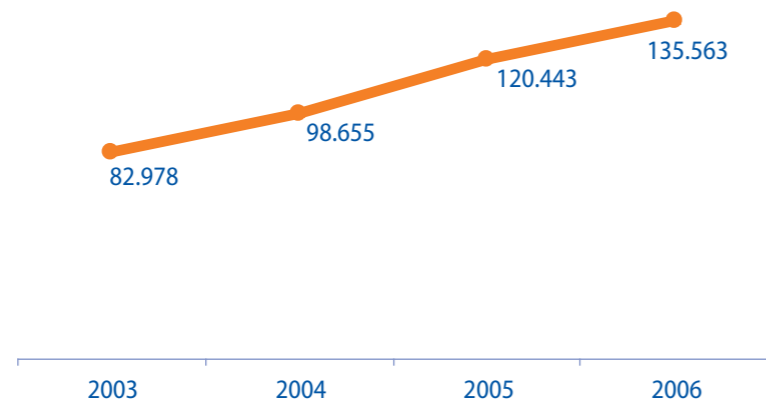
4X4s accounted for 2% of total car production in 2001; by the end of 2006 they accounted for 4% of production and 8.3% of car sales

FIGURE 8: 4x4 VEHICLE PRODUCTION IN SPAIN



33 ANFAC 2007

FIGURE 9: NUMBER OF 4x4 VEHICLES REGISTERED IN SPAIN



Source: Data taken from ANFAC/IEA, Memoria 2006

Labour costs are less than 10% of the car's final value and, in Spain, they are less than the cost of logistics (the transport of parts and the cars themselves during the production and sales process)

However, prospects for the world car industry are not looking very good. The Spanish car industry is facing a commercial deficit (imports are higher than exports), overproduction<sup>34</sup> and increasing relocation of the production process, despite being Europe's third biggest car manufacturer and Europe's fifth largest market for cars. Moreover, globalisation is creating instability in the car industry: for example, the relocation of the industry in search of cheap labour has weakened the sector in countries such as Spain. This is in spite of the fact that "labour costs only account for 10% of the car's final value, and in Spain cost far less than logistics (the transport of components and cars during the production process and sale)."

## The symbolic consumption of 4x4 vehicles

In the middle of the twentieth century, mass-consumption largely implied homogeneity or a degree of 'sameness' when it came to the products on offer. This was despite the media appearance of a huge range of washing machines, vacuum cleaners, dryers and toasters as well as the emphasis on comfort and convenience as the driving force behind all these appliances. The sociologist Pierre Bourdieu once said that many expenses, which were seemingly ostentatious, were in fact "compulsory elements of a certain lifestyle,"<sup>35</sup> and that buying certain products was mandatory for American families who didn't want to remain outside the consumer middle-class.

At this point in time, now that World War II was over, it became apparent that the new range of consumer goods had also acquired a linguistic dimension.<sup>36</sup> The excessive renewal rate of products, as well as their calculated obsolescence, had saturated the advertising sector. The supply of goods on a worldwide scale was feasible due to modern industrialisation but there was a need to constantly increase the consumption of these goods, which represented a comfortable lifestyle driven by progress. On account of this, the scarcity experienced at the beginning of the 20th century and the forced scarcity of goods in the post-war era gave rise to the growth of a large middle-class, but not to sustaining this situation.

The 60s and 70s brought the needed change. The so called "other expenses" of family budgets no longer included the acquisition of homogenising goods and services. Instead of being promised access to the middle-class, the act of consumption held open a door to a world full of mirrors: the consumer of the 70s mainly sought differentiation. Advertising began to identify different target audiences in order to refine its ads with *scientific* zeal. It was at this point that advertising routinely began to use slogans such as "Because I'm worth it" or "Don't imitate, innovate."

Thus, consumers appear to be more lost than ever within an environment of over information and commercial dependency. According to psychologist Javier Garcés, "in the past, if you walked around a store without buying anything, you would be almost thrown out. Nowadays, the intention is

to look around, as they know that at some point you will buy something. In fact, the consumer does not need anything. He's just waiting until the overwhelming urge to buy something creeps up on him".

Data collected by Dr Garcés show that 70% of all purchase decisions are taken in the shop where the items are bought, and 80% of the people that go to a shopping centre end up buying something.<sup>37</sup>

Given this situation, 4x4s have become a product that identifies a social class. "Height is one of the most frequently used arguments by those who choose a 4x4 vehicle, due to the feeling of visual control and safety. Plus, let's admit it, the intimidating effect they have on other drivers. Move out of the way or I'll move you out of the way, is what some 4x4 drivers' attitudes seem to imply," according to Pedro Urteaga, a journalist for the Spanish newspaper El Mundo, writing in the supplement MundoMotor.

Furthermore, 4x4s have shifted from being a functional car to a multi-purpose urban one instead. "Around 90% of buyers have never set foot in the countryside," assures Luis Otero, sales manager for BMW. "There's no doubt about it: they have become fashionable."<sup>38</sup>

Over the past decades, the huge range of objects that mass consumers consider to be essential to qualify for entry into the elitist group of 1.7 billion world consumers is not enough: a further component has been added and that is a repetitive collection of messages that encourage consumption based on sentimental loyalty. The role of advertising is the key factor here. As an ideological tool in the service of these patterns of consumption, it no longer aims to offer useful information on a product but instead takes advantage of the communicative possibilities of audio-visual language and the commercial benefits of using the emotional factor as a selling point. "Few products sell without including the emotional factor. There are few differences between one product and the other; the real difference relates to brand loyalty and the consumer's trust. This trust grows by creating an emotional tie over years, one that leads you to choose a particular brand over another," says the president of an advertising agency.<sup>39</sup>

Thus, 4x4 vehicles are now at the top of the symbolic and emotional pyramid - where the car's brand and social status are key elements in its purchase - a place that used to be occupied by sports cars and luxury cars.



34 "La industria del automóvil vuelve a pinchar". El País, Negocios, 19-11-2006.  
35 Pierre Bourdieu : La distinction. Ed. Les Editions de Minuit. Paris, 1979.  
36 Luis Enrique Alonso: La era del consumo. Ed. Siglo XXI. Madrid, 2006.

37 Luz Sánchez-Mellado: "Quiero esto y lo quiero ya". El País, 11-06-2006.  
38 Terra actualidad, 2007.  
39 Allen Rosenshine, World President of BBDO. Interviewed by Mireia Corchón for CincoDías, 27-06-2006.



## The safety myth

There is a widespread impression that 4x4s are safe vehicles. The *safety* issue is one of the main concerns that buyers of 4x4s claim to have in mind at the time of purchase. 4x4 vehicles are advertised like free spaces, where once inside, we feel like we are on a watchtower from where we can either face the aggressive city or the inhospitable nature by avoiding any obstacles that may arise. Its robust appearance confirms that image. However, this feeling of safety is largely subjective and false.

According to the Spanish Department of Transport (DGT in Spanish), no differentiated statistics on the number of 4x4 related accidents exist in Spain. Nevertheless, it would seem advisable to find such statistics, given the specifications of these cars, as well as the sharp increase in sales of these vehicles. In 2004, almost 43,500 people died on the roads in the USA, where the 4x4 is the undisputed king.<sup>40</sup> The most remarkable fact about this number, which is the highest in the last 15 years, is that a 4x4 vehicle was involved in 36.2% of all fatal rollover accidents.<sup>41</sup> A recent study conducted by a British insurance company showed that 4x4 vehicles have a 25% higher probability of being involved in an accident than the common car.<sup>42</sup> The Transport Research Laboratory in Great Britain has linked the increase in sales of 4x4s over the past decade to the increase in road related deaths (an increase of 20 deaths per year).<sup>43</sup>

The most outstanding factor when considering safety aspects is that 4x4 vehicles are bulkier than the common car. They are very long, heavy – close to two tons – and very tall. Thus a 4x4 vehicle weighs almost double and measures almost half a metre longer than the Renault-Mégane, which is the best-selling car on the market. If we add the subjective safety feeling promoted by 4x4s to the above physical characteristics that already hinder safety, the result we get is cars of an inferior safety quality being driven by extremely self-confident drivers.

### Safety in a 4x4

Safety in 4x4s may change according to the make and model. However, we want to stress some factors that apply to all 4x4s.

40 Fatality Analysis Reporting System (FARS), NHTSA. <http://www-fars.nhtsa.dot.gov/>

41 Traffic Safety Facts 2004, NHTSA. <http://www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/TSFAnn/TSF2004.pdf>

42 "Safe bet for a bump". in Mail on Sunday, 10-10-2004.

[http://www.thisismoney.co.uk/news/article.html?in\\_article\\_id=395321&in\\_page\\_id=4](http://www.thisismoney.co.uk/news/article.html?in_article_id=395321&in_page_id=4)

43 "Little and large, a lethal combination". Times Online, 21-3-2005.

<http://www.timesonline.co.uk/tol/news/uk/article432972.ece>

### Active safety

Active safety refers to all factors that contribute to the prevention of a shock or accident from taking place. 4x4s have more limitations, as their sluggishness is greater due to their heavy size. Therefore, the risk of rolling over is higher and 4x4s are more difficult to control when needing to swerve or during emergency braking. If a driver takes a turn too fast, the risk of going into the opposite lane is higher. Moreover, there is a high risk of veering off the road, rolling over or colliding with other vehicles ahead.

Furthermore, the gravitational centre of a 4x4 vehicle is higher than that of the common car, which makes it more difficult to control. In addition, this type of vehicle is normally equipped with long travel suspension, which causes a significant tilt in the bodywork.

Also, the greater the car's sluggishness, the longer it takes for the car to come to a stop. It takes approximately 70 metres for a saloon car that has been travelling at 140km/h to come to a complete stop. This stopping distance is greater for a 4x4. Moreover, if the vehicle's tyres are off-road tyres, the grip onto the asphalt becomes even smaller.

In general, these vehicles wear mixed type tyres, so as to run on both asphalt and off-road with equally good performance. However, these tyres do not have the same performance on asphalt as tyres that have been specifically developed for tarmac use only. The same occurs when driving off-road; they do not perform as well as off-road tyres. In addition, these vehicles normally wear high-profile tyres, thus the higher the profile of the tyres, the less the steering precision, which is in necessary for sudden manoeuvres.

It is true that traction and stability control systems in 4x4 vehicles have improved over the last years. However, their horsepower has also increased at a spectacular rate, which is in line with the general increase of horsepower in all cars (over the last seven years, the average horsepower per car sold in Spain has increased from 95 to 115<sup>44</sup>). A 4x4 vehicle with an engine of up to 300 horsepower can easily reach 200 km/h. A car that weighs an average of 2500kg and can easily reach such speeds puts any safety system to the test. A report written by Admiral, a British insurance company, has concluded that in case of an accident, 4x4 drivers are 27% more likely to be found guilty of a collision.<sup>45</sup> The laws of Physics are inexorable.

### Passive safety

Passive safety refers to all car features that contribute to the protection of passengers during an accident. Some 4x4 vehicles have increasingly increased the number of airbags and have fitted seat belts on all car seats. Some models have even obtained high scores in the EuroNCAP<sup>46</sup> system, despite the fact that no 4x4 is amongst the ten safest cars to have been tested since 1998. On the other hand, several 4x4 models are yet to obtain more than three stars according to the EuroNCAP system (five are the maximum stars awarded). Not all models have lateral airbags. Also, it is generally accepted that two children can occupy an adult seat, even when only one seat belt is available. Furthermore, one must not forget that the use of such safety features, such as seat belts, will always depend on the driver and passengers.

Statistics indicate that, in case of an accident, passengers are at a greater risk of dying. In 2003, the Traffic Safety Agency of the United States reported that the passenger mortality rate in accidents caused by rollover was three times higher in 4x4 vehicles than in a saloon car.<sup>47</sup>

44 "La muerte viaja a 120 km/h". El País, 17-12-2006.

45 Admiral Insurance, in Sunday Times. 10-7-2005.

46 Independent European organism that measures the safety of the vehicles by means of impact tests (crash-tests).

47 Speech of Jeffrey W. Runge, manager of the National Highway Traffic Safety Administration, to the Commission of Commerce, Science and Transport of the Senate of the United States. 26-2-2003.

<http://www.nhtsa.dot.gov/nhtsa/announce/testimony/SUVtestimony02-26-03.htm>

Due to their weight they are less easy to manoeuvre and so are more likely to roll over; there is also less control of the vehicle when turning bends or braking suddenly

According to the United States' Traffic Security Agency, the death rate of 4X4 passengers is three times higher than that of passengers in regular cars when they roll over

## Safety of other vehicles

If there is a collision between a 4X4 and a smaller saloon car, the driver of the latter is 12 times more likely to die than the 4X4 driver

4x4s are not only less safe in themselves but also pose a greater threat to other vehicles if a collision occurs. Due to their height and the size of their bumpers 4x4s often exceed the protective structures of smaller vehicles, which increases the possibility of killing or seriously injuring the passengers of other vehicles.

A study undertaken in the USA by the Insurance Institute for Highway Safety shows that only vehicles equipped with lateral airbags are moderately safe in case of a lateral collision with a 4x4 vehicle. Moreover, EuroNCAP does not evaluate the protection performance of cars in case of a collision with a 4x4 vehicle. In fact, if the USA criteria were applied to the ten best-selling vehicles in Spain of 2004, it would be evident that only five of them offer some kind of protection to their passengers in case of a lateral collision with a 4x4 vehicle. Moreover, only one of them could reach an optimal protection level, since it allows for the instalment – a feature that is charged extra - of lateral airbags in the back seats. Other studies claim that, in case of a lateral collision the driver of a saloon car is four times more likely to die if the vehicle with which it collides is a 4x4.<sup>48</sup>

The outlook is also not very promising in the case of a head-on collision. In spite of safety improvements over the last decade, crash tests undertaken in 2004 between a 4x4 vehicle and a saloon car at a speed of 56 km/h show that the impact of the collision that reaches the interior of the saloon car is too high. Passengers may consequently suffer serious leg injuries. During these tests, it was observed that saloon cars are not wide enough in comparison to 4X4s, thus often leading to 4x4s ending up on top of them.

An extreme situation may occur in case of a collision between a 4x4 and a mini or a small size saloon car. Recent studies of the Transport Research Laboratory in the United Kingdom confirm that in this type of collision the driver of the smaller vehicle is 12 times more likely to die than the driver of the 4x4.<sup>49, 50</sup>

## Safety of pedestrians and cyclists

A pedestrian who has been hit by a large 4X4 is twice as likely to die than if he is run over in similar circumstances by a normal sized saloon car

In urban areas 4x4 vehicles have an advantage over their surroundings. These vehicles, with their imposing front and back bumpers that can absorb the impact of a collision and their protection bars at the doors, have become anti-social as they have greatly contributed to putting pedestrians increasingly at risk. Even though according to EuroNCAP most vehicles perform badly with regard to pedestrian protection, in the case of an accident involving a pedestrian, some 4x4 cars have actually scored zero out of four.<sup>51</sup>

4X4 vehicles are the most dangerous vehicles with regard to pedestrian safety. It is worth mentioning that a pedestrian who is run over by a car whose speed is just 35 km/h is likely to be seriously injured. However, the results of tests carried out in Germany show that the cars that leave the dummies in the most terrible state are 4x4s. Due to the height of these vehicles, the pelvis receives the full blow, which causes serious internal injuries.<sup>52</sup> Another recent study carried out in the USA has shown that a pedestrian struck by a large size 4x4 vehicle is twice as likely to die than one who has been struck in identical conditions by a normal size saloon car<sup>53</sup>.

48 The American Insurance Institute for Highway Safety: "Green groups out to shame 4wd vehicles owners". Times Online, 8-1-2005. [http://driving.timesonline.co.uk/tol/life\\_and\\_style/driving/article411518.ece](http://driving.timesonline.co.uk/tol/life_and_style/driving/article411518.ece)

49 Transport Research Laboratory in 'Little and large a lethal combination', Times Online, 21-3-2005 <http://www.timesonline.co.uk/tol/news/uk/article432972.ece>

50 In <http://www.motorpasion.com/2006/10/29-que-ocurre-cuando-choca-un-4x4-contra-un-turismo> the result of a lateral crash of a 4wd vehicle against a coupe can be seen.

51 "How Safe is Your Car? The European New Car Assessment Programme". The Times, 27-11-2005.

[http://www.euroncap.com/content/safety\\_ratings/introduction.php](http://www.euroncap.com/content/safety_ratings/introduction.php)

52 "Accidente mortal". *El Mundo Motor*, 28-11-1995.

<http://www.elmundo.es/papel/hemeroteca/1995/11/28/motor/603797.html>

53 Devon E. L. y Hampton C. G.: "The fatality and injury risk of light truck impacts with pedestrians in the United States", in: Accident Analysis and Prevention (vol 36, p. 295). Department of Mechanical Engineering, Rowan University, USA

The importance of the driver's role and the lack of understanding on how to protect pedestrians are evident by the additional safety features added onto 4x4s. A recent study shows that a 4x4 with frontal safety features travelling at a speed of 25 km/h induces similar injuries to a pedestrian to the ones it would have induced if travelling at a speed of 40 km/h without these features. Recently, the European Union passed a directive, which took effect in August 2006, which regulates the additional frontal safety features for such vehicles. Cars that do not comply with size, form and disposition requirements, or that do not pass certain tests, will be considered illegal.<sup>54</sup> According to the Transport Research Laboratory, this norm will save approximately 140 people from dying and 1500 being injured every year in the United Kingdom.<sup>55</sup>

It is necessary to highlight situations in which the pedestrian is a child. We must not forget that these vehicles are increasingly being used for daily urban activities, such as taking children to school or going shopping. In both cases, the areas in question are full of families whose small children cross the streets and parking spaces in a chaotic fashion. The size and design of these vehicles restrict overall driver visibility. According to the American consumer organisation, Consumer Report,<sup>56</sup> the blind spot at the back of the vehicle - depending on the driver's height and for a child's height of about 70cm - can vary between 4 and 12 metres. Moreover, due to a child's small size, usually the impact takes place on the chest and head. Consequently, children are particularly vulnerable in the case of these vehicles.



2004. <http://users.rowan.edu/~gabler/publications/aap-2004.pdf>

54 Directive 2005/66/CE of the European Parliament and the Council, of 26 of October of 2005, relative to the use of systems of front protection in motor vehicles and that modifies the Directive 70/156/CEE of the Council.

55 [http://geo.channel4.com/4car/news/news-story.jsp?news\\_id=12345&ref=archive#article](http://geo.channel4.com/4car/news/news-story.jsp?news_id=12345&ref=archive#article)

56 "The problem of blind spots". Consumer Reports, August 2006.

<http://www.consumerreports.org/cro/cars/safety-recalls/mind-that-blind-spot-1005/overview/index.htm>



## Problems related to 4x4s in the city

We live surrounded by cars. When we go out on the street, we see that our cities have been planned for the car and that there are thousands of them around. In Spain, 20-30% of urban areas have been planned to prioritise motorised transport.

According to the EU's Thematic Strategy for an Urban Environment,<sup>57</sup> "most cities share a series of environmental problems, such as inefficient air quality, constant traffic jams and environmental noise, bad quality in urban construction, greenhouse gas emissions, chaotic urban growth and the generation of waste and residual water". Cars are certainly one of the main factors that contribute to aggravating these problems; problems that diminish our lifestyle and quality of health.

If we listen to the radio every morning we can hear about huge traffic jams in big cities or accidents in which people are injured or killed. Nevertheless, we are maybe not aware that there are many other problems associated with the use of cars in cities. We will refer to this as the "iceberg effect" of the car in the city. We will now go on to describe these problems, which are aggravated by 4x4s<sup>58</sup>.

### Observable problems

So called traffic jams are very common in our big cities, although nowadays they are increasingly affecting smaller cities. Despite the improvements introduced in public transport, some studies prove that the number of cars is currently increasing and that they are used more frequently, which leads to these situations taking place in our cities on a daily basis.

Local authorities have generally tried to curb traffic jams by enlarging roads (and where this is not possible, by digging tunnels or building flyovers). This has only encouraged more people to use their cars, so that we are once again locked into the same situation, involving different places and more cars, and thus entering a vicious circle. Moreover, these traffic jams seriously affect the effective use of road transport –unless the different methods of transport have been segregated–, as well as other road users. Clearly, big cars such as 4x4s contribute more to these traffic jams than the smallest cars.

In addition, we have already mentioned the high number of deaths on our roads. Nevertheless, accident rates in our cities are not so well known. Even though this number of accidents is currently decreasing, it is still very high: 1,146 people died in 1999, whereas in 2005 the mortality rate due

to car accidents decreased to 790, together with 64,020 people injured<sup>59</sup>.

According to DGT statistics, 700 pedestrians die every year, half of them on urban roads. Moreover, 59 cyclists were killed on the highways during 2005, whilst 23 cyclists were killed in cities. We have already commented on how dangerous 4x4s are for our most defenceless road users (due to their big bodywork, the bumpers, and their enormous weight) so we will not dwell on the subject any further.

### Less noticeable problems

#### The culture of fear

In addition to the accidents mentioned above, many other accidents frequently happen within the urban context; these accidents, in which people with minor injuries are involved, are also important despite the fact that they do not appear in the statistics. These minor accidents and the dangerous situations in which a high number of vehicles being driven at high speeds on the roads are involved, have created a fearful situation, worry and stress, which often leads to behavioural changes in the users of the public roads. The bigger the cars and the greater the volume of traffic, the more this fear increases.

An obvious example of this situation is when we tell children not to play on the street. This is what we are teaching new generations of citizens. Pedestrians and, above all, careless children are considered dangerous. According to this version of road safety, these accidents are caused by children behaving recklessly.

"The message which our society and institutions is inculcating is that an individual of thirty kilos who is running after a ball is a dangerous being who has to be trained. However, a 1,000 kilo machine made of steel, crossing the streets at more than sixty kilometres per hour, is not. The one who must be careful and not cause problems is the child, even though he is not legally responsible for his actions; on the other hand, the driver, (of at least eighteen years of age) has the prerogative and society's blessing to fight for his rights to drive on the city's streets. The faster he goes, the better the flow of traffic is."

"This hierarchy of values, this idea of danger, has led to the disappearance of children running about on their own on the streets of the cities. In Spain there are no data relating to this, but assuming that this phenomenon is similar to other countries, it is thought that in the 70's 90% of children under the age of seven went to school on their own, and only thirty years later, this number has fallen to 10%. Nowadays children are similar to dangerous animals that we must lock up, either at home or in areas that are under surveillance; when we let them out they must be permanently under control."<sup>60</sup>

We do not need to be psychologists to realize that this situation has serious consequences for the psycho-social development of our children, who furthermore suffer from an important lack of autonomy, have fewer possibilities of getting to know their surroundings independently, exercise less...

However, the problems are not limited to those which affect children. A city designed for the use of the car leaves out people who do not have one or those who do not have a driving licence. Despite the popular saying "everybody has got a car", in real life that is not true,<sup>61</sup> there is a large group of people in society that can prove that saying wrong, for example the elderly, children, women, handicapped people, the poor or simply people who do not want to drive. The more *necessary* cars become in order to carry out our daily life, the larger the number of excluded, and for these people the city becomes a prison.

Parents' fear of their children getting run over means that they can't play on their own on the streets of our towns and cities

57 SEC/2006/16. Brussels, 11.1.2006. COM (2005) 718 final.

58 More info in: *Los problemas del coche en la ciudad*, Ecologistas en Acción, 2007.

59 Anuario de accidentes 2005, General Traffic Directorate.

60 Extracted paragraphs from Marta Román "Niños, ciudadanos peligrosos". *El Ecologista* 25.

61 30% of Spanish families do not have a car. Half of them do not want it, and the other half can not afford it.

### Changes in the urban area

One of the biggest impacts cars have in our cities, and also one of the most difficult to notice, are the changes it causes in the lay-out of the area where we live. Cars take up most of the space on the streets. These streets have been modified in order to make more space for cars by reducing the size of sidewalks, clearing boulevards, reducing the number of green areas... Since the number of vehicles is still increasing, cars have invaded areas originally reserved for pedestrian use as well as for other activities; therefore, it has been necessary to put up fences to protect pavements, pedestrian crossings and green areas. This situation is beginning to change in some cities, but there is still much work left to do until we reach a level of coexistence that does not cause so many problems to pedestrians. Once more, the size and volume of 4x4 vehicles have an extra impact in our cities.

In this situation, it is clear who has priority in most cities: roads are continuous whereas sidewalks are not. Streets are exclusively for the use of traffic (sometimes traffic travelling at speed) and for parked vehicles. In most of them, it is not possible to play, chat with a neighbour, and even walking or cycling can be difficult or risky. Walking becomes a daring, obstacle-filled feat (due to nonexistent pedestrian crossings or pedestrian crossings that are too far away, traffic lights that give you only a few seconds to cross, overpasses...), a feat which sometimes poses insurmountable obstacles for people with mobility problems.

As our streets and squares just become places for the use of traffic, their main function is lost, and they are no longer a place to meet and interact with other people; this function is what really defines the importance of cities.

### Risks for cyclists and pedestrians

Despite the difficulty of getting around on foot, walking still accounts for a large percentage of all journeys undertaken, particularly in towns and our smaller cities. For example, in Granada it accounts for 47.9% of all journeys, in Bilbao for 45% and in Madrid for 31.1%<sup>62</sup>. Paradoxically, in nearly all our cities the total percentage of journeys on foot is roughly the same as journeys by car, although in the hierarchy of how the towns and cities are planned, and the use of space, priority is clearly given to cars.

Although the Spanish weather favours the use of bikes as a means of transport, in Spain the number of people travelling by bike is quite low, especially if we compare it with many other European cities. In Spain, for each kilometre cycled, 432 km are covered by car, whereas in the Netherlands this proportion is reduced to 11 km covered by car per kilometre cycled, and in Germany it is 35 km<sup>63</sup>.

Dangerous roads and aggressive driving are partly responsible for this low use of bikes in our cities, due to the fact that these drivers do not respect other road users. As we have already indicated, 4x4s' size, as well as their bumpers, pose an extra risk for cyclists as well as for pedestrians.

### Urban expansion

The spread of housing development from the urban centres to more remote areas has contributed to the use of motorized transport, together with a lifestyle linked to the use of cars. The old saying "cars create distances that only they can cover" has become a reality in our country, where the old compact cities have been enlarged in brutal ways, forming a new landscape where cars become a necessity.

This process seems never-ending. These new developments encourage the construction of infrastructures for cars, infrastructures that, in turn, promote the creation of other remote housing developments that are even further away from the town and city centres. All this is accompanied

<sup>62</sup> Urban Mobility Observatory: *Report 2004*. Published in June 2006. Ministry for the Environment.

<sup>63</sup> European Agency for the Environment, 2007: *Transport and Environment: on the way to a new common transport policy*. [http://reports.eea.europa.eu/eea\\_report\\_2007\\_1/en/eea\\_report\\_1\\_2007.pdf](http://reports.eea.europa.eu/eea_report_2007_1/en/eea_report_1_2007.pdf)

by an uncontrolled expansion that destroys unspoilt and agricultural areas. In addition, this urban expansion causes great difficulties for public transport.

### Noise

According to the experts, a reasonable level for maintaining our well-being during the day sets noise levels at a maximum of 50-55 decibels, whilst at night the level should not arise above 40 decibels. But in general our cities are much noisier, largely due to traffic.

The main sources of traffic noise in cities are the contact of tyres against the tarmac, the noise of car engines and the use of horns. Due to their characteristics, 4x4s' wheels make more noise on tarmac, their engines are noisier than those of smaller cars and, consequently, they make more noise than other vehicles.

Although noise has traditionally been considered as a minor inconvenience, according to studies carried out by the World Health Organization (WHO) and other Organizations, the impact of acoustic pollution on health ranges from the progressive loss of hearing to increasing arterial pressure, heart rate, respiratory frequency and the levels of endocrine segregation, in addition to altered sleep patterns and other side effects. It also leads to a 20% increase in the possibility of suffering heart attacks, stress-related problems and irritability that affect our capacity to concentrate and learn, as well as our interpersonal relations, productivity, accidents at work...

It is estimated that 74% of the population in our cities have to put up with high levels of noise, and that 23% endure noise levels of over 65 dB (A)<sup>64</sup>. And, although oddly enough this does not raise the biggest number of complaints, the biggest culprit is traffic.

### Air pollution

The loss of urban air quality is a very serious problem. According to studies carried out by the Ministry for the Environment and the European Commission, atmospheric pollution causes 350.000 premature deaths per year in Europe, 16.000 of which occur in Spain. This means that, due to air pollution, 4 times more people died in Spain from air pollution than from traffic accidents, and 11 times more than from accidents at work. The prestigious medical magazine *The Lancet* concluded in an article published in 2002 that living closer than 50 meters to a great urban road doubles the risk of dying from a respiratory or cardiovascular problem.

Currently, the worst pollutants as far as our health are concerned are: particulates of different sizes, nitrogen dioxide (NO<sub>2</sub>) and troposphere ozone (O<sub>3</sub>), the ozone that is formed in the lowest layer of the atmosphere and that is in direct contact with human beings. Most of these pollutants originate by from the traffic in our cities<sup>65</sup>.

Pollutants	Source	Health effects
Particulates PM <sub>10</sub> , black fumes	Motorized transport (mainly diesel), coal combustion and fuel, heating.	Associated with many respiratory diseases. Increase in mortality due to heart and pulmonary diseases.
Nitrogen dioxide (NO <sub>2</sub> )	Motorized transport.	It can increase the vulnerability to infections and asthma attacks.
Ozone (O <sub>3</sub> )	Secondary pollutant produced from nitrogen oxides and other compounds.	It irritates the eyes and respiratory routes. Allergic, asthmatic or other patients with respiratory problems are especially sensitive.
Volatile Organic Compounds (COV)	Solvent evaporation, distribution of gasoline and exhaust pipes of vehicles.	The benzene (found in gasoline between a 3% and 5%) is a carcinogenic agent which can cause leukaemia.

<sup>64</sup> Urban Mobility Observatory: *Report 2003*. Published in October 2005. Ministry for the Environment.

<sup>65</sup> More info in: Contaminación del Aire y Salud, Contaminación del aire en las ciudades, y otros. Ecologistas en Acción.

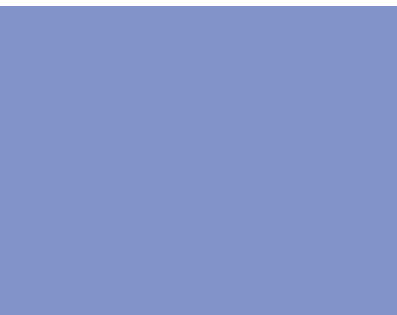
The height and bulk of 4X4s and their prominent bumpers pose an additional risk to cyclists and pedestrians

In Spain, atmospheric pollution leads to the premature death of 16.000 people a year



Moreover, the greater amount of these toxic substances is emitted by diesel cars through their exhaust pipe. 4x4s therefore contribute to worsening this serious problem, since most of them mainly use diesel fuel and, due to their big size and cubic capacity, also emit a greater amount of polluting gases.

Nowadays, there are certainly more efficient and less polluting cars. But it is also true that the number of cars has increased, that we use them more frequently and that we drive longer distances in them, which cancels out all these technological improvements. Thus, for example, NO<sub>2</sub> emissions have increased by 25% from 1990 to 2004, largely due to transport<sup>66</sup>.



66 Urban Mobility Observatory: *Report 2004*. Published in June 2006. Ministry for the Environment.



## Good practices: limiting the car

We will focus now on some experiences carried out in different places, aimed at reducing the impact of the increasing *motorization* of the society we live in. Of course, 4x4s are just one of the many elements of the serious problem we have with our transport system. To date, many of the measures adopted are too general and are focused on reducing the negative environmental and health consequences linked to the excessive use of the private car. All of them have in common a political will to put the citizens' general interest and their environment before other type of considerations, despite its possible initial unpopularity<sup>67</sup>.

### Speed reduction

Fuel consumption increases by velocity squared. Increasing the speed by 20% (driving at 120 km/h instead of 100, for example) means an increase of 44% in fuel consumption<sup>68</sup>. This leads to an increase in pollution and emissions into the atmosphere<sup>69</sup>. Limiting the speed in cities, as well as on roads, leads to a considerable reduction of polluting gas emissions, together with an increase in safety.

In 2004, the Ministry for the Environment suggested reducing speed limits on Spanish roads to reduce pollution<sup>70</sup>, but this move was abandoned after being rejected by automobile associations. Similarly, in Barcelona, in December 2007 the Catalonia regional government introduced a speed limit of 80 km/h along the fast road lanes within the metropolitan area, as part of their plan to reduce environmental pollution. The business community and drivers were opposed to it, even although this measure has proven to be efficient in many places. Some of these are described below.

**Belgium.** Belgian authorities have reduced the maximum speed on dual carriageways and motorways<sup>71</sup>. The speed limit has dropped from 120 to 90 km/h until further notice, due to the high levels of particles in suspension (PM<sub>10</sub>) and nitrogen dioxide (NO<sub>2</sub>). The government of the Brussels area has encouraged its citizens to use public transport, as well as to use their bikes or walk.

67 More ideas in: Ecologistas en Acción, 2006: *Buenas prácticas en movilidad sostenible para reducir la contaminación del aire*; and Ecologistas en Acción, 2007: *Ideas y buenas prácticas para la movilidad sostenible*.

68 How to save fuel. IDAE. <http://www.idae.es/coches/consejos.asp>

69 Report on how to reduce CO<sub>2</sub> emissions by limiting the speed. The Lower Speed Initiative, 2006. <http://www.publications.parliament.uk/pa/cm200506/cmselect/cmenvaud/981/981we57.htm>

70 "Los límites de velocidad podrían rebajarse". Terramotor, 2004. <http://motor.terra.es/motor/articulo/html/mot22109.htm>

71 "Bélgica reduce sus límites de velocidad". Terramotor, 2007.

[http://motor.terra.es/motor/actualidad/articulo/belgica\\_reduce\\_limites\\_velocidad\\_35494.htm](http://motor.terra.es/motor/actualidad/articulo/belgica_reduce_limites_velocidad_35494.htm)

In 2007 the Austrian government applied its 30 km per hour speed restriction to residential areas throughout the whole country

**Netherlands.** A busy main road in Overschie, the Netherlands, imposed speed limits of 80 km/h in 2002. Studies showed reductions of 35% in emissions of particulate matter, a 25% reduction in NO<sub>2</sub> emissions, and 25-50% in noise levels, apart from a 50% decrease in road accidents<sup>72</sup>.

**Austria.** The Austrian city of Graz was the first European city to introduce a maximum speed of 30 km/h in residential areas. The measure has resulted in a significant decrease in road accidents, especially in the serious nature of the accidents. 17% fewer pedestrians were run over. Although in 1992, when this measure went into force, only a 33% of the population was in favour, nowadays it is approved by 80% of the population<sup>73</sup>. In fact, in 2007, the Austrian Government extended this measure to all residential areas of the country.

**Switzerland.** Almost half the Swiss cantons apply speed limits based on environmental criteria along their dual carriageways. In 8 out of 26 cantons, the fast way speed limit is 80 km/h, instead of the official 130 km/h<sup>74</sup>. Switzerland has adopted this measure even though their contamination levels are low compared to Spain.

## Restricting access

Some municipalities have succeeded in limiting car access to their urban centres thanks to tolls, the setting up of *carfree* areas or other measures. Some rural councils have even limited motor vehicle access on certain roads. Thanks to these measures, the quality of life of their inhabitants has improved, or at least has not deteriorated.

### Urban Tolls

**London.** Since 2003 London has established its congestion charging scheme. This tax was aimed at reducing traffic congestion in the city centre. Results show that the measure is a success, since traffic has been reduced by 19% and NO<sub>2</sub> and particle emissions by 12%<sup>75</sup>. However, the increasing number of 4x4 vehicles in the British capital (where sales of these cars, known as *Chelsea tractors*, has doubled over the last decade) is beginning to undermine this progress. London City Council therefore agreed in 2006 to increase the congestion charge for the city centre for the most polluting cars, such as 4x4s. In order to drive in the city centre, drivers now pay a tax of £25 (€37) per day.

**Stockholm.** For almost a year, Stockholm carried out a trial period of congestion charging, similar to the London one. During that time, traffic in the city centre reduced by 22% and public transport use increased by 6%<sup>76</sup>. After the trial period, in 2006 the city held a referendum, and Stockholm's citizens voted in favour of adopting this tax measure permanently. The income generated is reinvested in the public transport system.

**Other cities.** Other examples of cities that have adopted congestion charging to access the city centre are Singapore, or the Norwegian cities of Oslo, Trondheim and Bergen. Recently Milan has adopted this measure. Rome charges its residents a significant yearly tax and prevents access to non residents during working hours. In several places in Italy, they have adopted the method of allowing drivers to drive on alternate days (depending on whether their number plate has an odd or even number), in order to tackle the atmospheric pollution problem.

72 Martin Kroon: Speed limits and Ecodriving. Environment Ministry of the Netherlands, 2005. [http://www.care4air.org/clearerair\\_pres/pm/martin-kroon.ppt](http://www.care4air.org/clearerair_pres/pm/martin-kroon.ppt)

73 Awareness for speed reduction and less car use. Civitas Initiative.

[http://www.civitas-initiative.org/measure\\_sheet.phtml?lan=en&id=86&PHPSESSID=84a39d7e8defe7231306751bd7](http://www.civitas-initiative.org/measure_sheet.phtml?lan=en&id=86&PHPSESSID=84a39d7e8defe7231306751bd7)

74 "Suiza, supercontaminada por el tráfico. Las autoridades helvéticas limitan la velocidad a 80 km/h". Terramotor, 2006. <http://motor.terra.es/motor/articulo/html/mot29385.htm>

75 Ken Livingstone, 2005: The World Technology Network. <http://www.wtn.net/2004/bio410.html>

76 Stockholm congestion tax. Wikipedia. [http://en.wikipedia.org/wiki/Stockholm\\_congestion\\_tax](http://en.wikipedia.org/wiki/Stockholm_congestion_tax)

## Parking Fees

This is a widespread and frequent measure which is used by many municipalities, although it is not very efficient as a way of reducing pollution unless it is adopted in conjunction with other policies.

**Amsterdam.** Parking fees in Amsterdam are extremely high (as high as €4 /hour for visitors) and they have forced citizens to use public transport and bicycles, which has clearly improved the quality of the environment, and has prevented Amsterdam from reaching the atmospheric pollution levels of other Dutch cities, such as Rotterdam or The Hague<sup>77</sup>.

**Paris.** Parking fees have increased by 75% in the city centre, and this has resulted in only 20% of the citizens using their cars.

**Tolosa.** The parking fees collected in problematic areas of the city are used to reduce the cost of public buses.

**Richmond Upon Thames.** In this London district an innovative taxing system based on CO<sub>2</sub> emissions<sup>78</sup> is under evaluation. CO<sub>2</sub> emissions in this district are very high compared to others, and it is mainly due to transport. This system establishes seven parking permit categories for residents, bearing in mind different vehicle emissions. While the least polluting vehicles benefit from a tax reduction or even from free parking, from 120 g of CO<sub>2</sub>/km onwards the price rises gradually, so that those who emit more than 225 g/km pay up to 200% more than those paying the basic fee. If this measure were to be applied to the 4x4 cars that are sold in Spain, 70% of them would pay the highest fee.

**Other cities.** Cities such as Groningen (Netherlands), Münster, Munich and Freiburg (Germany), or Sydney (Australia), have succeeded in reducing the number of cars on their streets, partly thanks to their restrictive parking policies.

## Exclusion areas

This measure consists in creating areas in which the use of private cars is not permitted. The possibilities range from *car free* areas to limiting access to certain vehicles only and to specific areas.

**Freiburg.** The historic centre of this German city with a population of 200.000 cannot be accessed by car, although there are many parking lots in the surroundings. Motorized access is reserved for loading and unloading, residents and hotel clients. Public transport offers a powerful integrated network, based on the tram and the suburban train. Furthermore, some residential neighbourhoods have reached the status of *car free neighbourhoods*<sup>79</sup>. These neighbourhoods are being designed to reduce the need for travelling a long distance, by creating nearby workplaces, schools and other services. Public transport stops are always within 500 metres of any household. Cars can only get into the neighbourhood via the main road. The urban centre is connected by bicycle path and a tram line along the central avenue of the neighbourhood, which links with the regional train.

**Stockholm.** In 1996, Stockholm established an environmental area to limit the access of certain vehicles to the city centre<sup>80</sup>. The aim of this system is to accelerate the transition towards a cleaner traffic system. The same system has been adopted in other Swedish cities, such as Malmö and Gothenburg. Although it only denies access to the most polluting trucks and buses, the improvement in air quality is already evident, and particle emission has been reduced by 40%. Public opinion is increasingly in favour of this system and, therefore, in the next five years a two-phase

If the measures introduced in Richmond upon Thames were applied to all 4X4s sold in Spain, then 70% of them would have to pay the highest parking fees

77 European Environmental Bureau: Measures to improve air quality and reduce particles. 12 virtuous examples. [http://www.eeb.org/activities/air/documents/Measures\\_to\\_improve\\_AQ\\_000.pdf](http://www.eeb.org/activities/air/documents/Measures_to_improve_AQ_000.pdf)

78 London Borough of Richmond Upon Thames, 2006: Parking charges based on CO<sub>2</sub> emissions.

[http://news.bbc.co.uk/1/shared/bsp/hi/pdfs/25\\_10\\_06\\_parking.pdf](http://news.bbc.co.uk/1/shared/bsp/hi/pdfs/25_10_06_parking.pdf)

79 Freiburg: Sustainable Model. City District Vauban. <http://www.eaue.de/winuwd/178.htm>

80 Examples of air quality measures near roads within Europe. National measures of the international CEDR air quality group. Julio 2005. [http://www.integaire.org/platform/docs/working\\_docs/Examples%20of%20Air%20Quality%20Measures%20within%20Europe.pdf](http://www.integaire.org/platform/docs/working_docs/Examples%20of%20Air%20Quality%20Measures%20within%20Europe.pdf)

enlargement of the environmental area has been planned. This system could be extended to apply to the most polluting private vehicles.

**Paris.** Since 2004 Paris City Council has been discussing preventing 4x4s access to the city centre. The deputy major reasoned that these cars are not designed for city use, and since “they are big pollutants, take up a lot of space and are dangerous for the safety of pedestrians and other drivers, it makes no sense to let them enter the city”<sup>81</sup>. The French Environmental and Energy Control Agency pointed out that 4x4s emitted 232 grams of carbon dioxide per kilometre, while four doors vehicles with single axle traction emit an average of 146 g/km<sup>82</sup>. The regulation would consist of not granting access to the city to the heaviest polluters (many 4x4 vehicles, but also others) during the days when, according to Brussels, pollution levels exceed the limits. Furthermore, these cars would not be allowed into unspoiled natural areas within the city, such as the Bois de Boulogne or the riverbank of the Seine. This measure is just one of the many included in a plan to improve the city’s mobility, and includes a reduction in the number of lanes available to cars.

**Florence.** This Italian city passed a municipal regulation at the end of 2004, which limited access to the city centre. This regulation’s main aim was to put an end to the increasing number of 4x4 vehicles in the narrow streets of the old city that were causing space problems. Now the centre of Florence has Areas with Limited Traffic, to which access is granted only through the payment of special fees according to timetables. Some vehicles have temporary or permanent permits, while the regulation forbids access to any vehicle whose tyres’ diameter is more than 730 mm (except for residents)<sup>83</sup>.

**Sigüenza.** By the end of 2004, this village in the province of Guadalajara (Castile-La Mancha) was one of the first to pass a municipal regulation that limited the access of 4x4s and other motorized vehicles, such as *quads* or all-terrain motorbikes, to many paths and certain areas of public forests. Their aim is to protect the environment against the damage caused by vehicles, and to promote walking and enjoying nature. It also imposes traffic regulations on areas where access is allowed<sup>84</sup>.

### Traffic general fees

**Netherlands.** The Dutch government has just passed a road tax system which applies to all vehicles operating in the Netherlands. It is a tax per kilometre travelled, and the amount due is directly related to the environmental impact of each vehicle, place and time of driving. This system involves a complex mechanism of satellite control of the 8 million vehicles driving in the country. It is expected that this system will be fully operational by 2016.



81 “Paris bid to ban designer jeeps”. CNN, June 2004. <http://www.cnn.com/2004/WORLD/europe/06/10/france.suvs/index.html>

82 Julio Godoy: “Contaminación a todo terreno”. Tierramerica, 2004. <http://www.tierramerica.net/2004/0710/acentos.shtml>

83 Ordinanza del Sindaco. Divieto SUV. [http://www.comune.firenze.it/servizi\\_pubblici/trasporti/divietoSUV.htm](http://www.comune.firenze.it/servizi_pubblici/trasporti/divietoSUV.htm)

84 Municipal Order to regulate motor vehicles transit in the rural environment, in Sigüenza and surroundings. B.O.P. de Guadalajara nº 154, of December 24th 2004. [http://www.ecologistasenaccion.org/IMG/pdf\\_ORDENANZA\\_SIGUENZA.pdf](http://www.ecologistasenaccion.org/IMG/pdf_ORDENANZA_SIGUENZA.pdf)

## Proposed measures

As we mentioned in the introduction of this report, it is not about demonizing 4x4 vehicles just for fun, since not all models have an equal impact, and depending on which aspect one looks at, there are other vehicles that equal or even surpass the impact of 4x4 vehicles. However, the particularities of 4x4 vehicles make them share a number of negative characteristics which justify the implementation of measures that will, on the one hand, discourage drivers from acquiring a vehicle that they probably don’t need, and on the other, to make drivers responsible for the environmental impact of their vehicle.

### Tax measures

Measures here proposed are intended to move towards a fairer distribution of the environmental impact of private vehicles, in keeping with the ‘polluter pays’ principle. Of course, this principle must be applied to every vehicle that pollutes or causes other negative impacts, regardless of what type it is.

#### Registration Tax

In October 2007 the Government approved a new air quality law, which includes a taxing system of vehicles according to their CO<sub>2</sub> emissions. Until now, the registration tax of cars depended on their cubic capacity<sup>85</sup>. In 2008, four different car tax rates will apply: 0% for cars emitting less than 120 g/km of CO<sub>2</sub>; 4,75% for those emitting between 120 and 160 g/km; 9,75% for those in the range 160 and 200 g/km; and 14,75% for cars emitting above 200 g/km. 98% of the big four-wheel drive models will pay the most expensive tax.

Although this initiative is a step in the right direction when it comes to promoting changes in consumer habits, it probably doesn’t go far enough. It would be important, beforehand, to have definitive information on what changes in the registration tax would result in a sales decrease of these vehicles. Furthermore, to adjust more realistically to the ‘polluter pays principle’, and falling in line with what the European Parliament recently recommended<sup>86</sup>, taxes should be even higher for vehicles which are less efficient than others with an equal cubic capacity. On the other hand, it is important to include other polluting emissions in the tax. Let’s not forget that most vehicles sold in our country are diesel, which have lower CO<sub>2</sub> emissions, but pose a greater pollution problem

85 Cars with less than 2.000 cubic centimetres paid a 7% of the initial price, and those with more, a 12%.

86 The European Parliament is in favour of eliminating the registration tax in a ten year term, *Ifemamotor*, <http://www.ifemamotor.ifema.es/modules/news/article.php?storyid=415>



as regards nitrogen dioxide and particulates, with the health effects already described.

Measure:

- ▶ To monitor the effect on the market of this new measure, and to raise taxes for the most polluting categories if necessary. To continue improving the tax on the registration of vehicles, incorporating elements such as energy efficiency and other pollutants. Other elements could be considered, such as pedestrian safety.

### Traffic tax

Although the difference in traffic tax between different councils can reach 300%, the tax criterion is the same for all: the fiscal cubic capacity of the technical data of the vehicle<sup>87</sup>. Bearing in mind that the vehicles that will drive around the municipality will contribute differently to the pollution and quality of life of the city in general, it would be interesting to include environmental and safety criteria in these taxes.

Furthermore, since this tax is paid yearly, if it is clearly linked to environmental criteria it can be much more of a disincentive in the purchasing of highly polluting vehicles than the registration tax, because the later is paid only once.

Measure:

- ▶ To include environmental and pedestrian safety criteria in the fee scale for traffic tax. To set of a minimum charge that could be increased by councils but never reduced.

### Fuel tax

It is also clear that the easiest way to discourage the purchasing of highly polluting vehicles, such as the four wheel drive, is to apply environmental taxes to fuel. In this way, the more fuel the car uses and the less efficient it is, the more it would cost. One way of placating hostile reaction to this policy would be to use the income from this tax to improve public transport.

Measure:

- ▶ To include an environmental tax on all car fuels. This tax should go towards investing in and promoting the use of public transport and alternatives to automobiles.

### Parking fees

Recently, an opinion poll carried out in the streets of Manchester by the organization "Alliance against Urban Four by Fours" showed that 83% of the surveyed passers by were in favour of applying a double parking fee to 4x4 vehicles<sup>88</sup>. The reasoning was that any vehicle that consumes twice as much as a normal car, pollutes twice as much and poses a double risk to pedestrians, should pay twice as much for parking. As mentioned earlier, the London district of Richmond upon Thames is currently about to approve a parking fee system based on a car's CO<sub>2</sub> emissions. A similar measure in Spanish towns and cities with the highest traffic congestion would significantly reduce the presence of these vehicles.

Measure:

- ▶ Develop a parking fee system (for residents as well as for visitors) that better reflects real space requirements, pedestrian risk, and CO<sub>2</sub> and other pollutant emissions.

<sup>87</sup> The quantity is determined by each municipality, but an average value (according to www.consumer.es with prices from 2007) would be: vehicles with less than 8 horse fiscal power, 20,0 euros; from 8 to 11,9 horse fiscal power, 54,4 euros; 12 to 15,9, 111,6 euros; 16 to 19,9, 144,7 euros...

<sup>88</sup> 4WD drivers should pay double for their parking. Manchester Metro News.

[http://www.metronews.co.uk/news/article/0/181\\_4wd\\_drivers\\_should\\_pay\\_double\\_for\\_their\\_parking.html](http://www.metronews.co.uk/news/article/0/181_4wd_drivers_should_pay_double_for_their_parking.html)

As traffic tax is paid every year, if it were to be linked more clearly to environmental factors then it would be a greater disincentive to buying gas guzzlers than the car registration tax

### Access toll into urban centres

Many Spanish cities suffer from high levels of pollution. As we have seen, to address this problem some European cities have tried out taxing vehicles that want to access the cities' centres, establishing a sliding scale of payment according to vehicle type and its capacity to pollute. Studies on cost-effectiveness should be done to work out an appropriate sliding scale of charges. As well as taking into account noxious emissions, the measures should also include the other negative impacts of vehicles such as 4X4s in our towns and cities.

Measure:

- ▶ To establish congestion charging, grading the amount levied in such a way that it would effectively influence drivers' habits. These tolls would be determined after carrying out studies and might be adjusted once they were operational. Such an action is specially recommended for cities with severe pollution problems.

### Public awareness

In general, road traffic has a severe impact on health and the environment. These impacts, as we have seen, are greater with 4x4 vehicles. It could be compared, from a publicity point of view, to tobacco: while advertising talks about pleasurable sensations and social success, the reality is quite the opposite: smoking is definitely bad for your health. However, tobacco publicity is lately being greatly restricted, and nowadays there are socially accepted norms that oblige manufacturers to warn of the dangers of smoking.

Why is the situation not the same when it comes to looking at the impact of transport? There is a complete lack of information about the negative effects of 4x4s and other vehicles. However, the scientific community all now agree about the causes and consequences of climate change: climate warming is an unequivocal, documented fact, it will continue to get even worse, and humans are responsible. The World Health Organization (WHO) blamed climate change for about 150.000 premature deaths in the year 2000 (natural disasters, changing patterns in the spread of diseases, a seasonal factor leading to food-related infections)<sup>89</sup>.

On the other hand, another report from the WHO<sup>90</sup> shows that 1,2 million people in the World die every year from road accidents, and 50 million more are injured. If nothing changes, these figures will increase by 65% in 15-20 years. Between them, the number of premature deaths and the years of disability place a great burden on health services; the WHO states that, unless proper measures are taken, traffic will be the third highest cause of death by 2020.

This is just taking into account road accidents, but leaving out deaths arising indirectly by atmospheric pollution. Again, according to the WHO, particulate pollution in the cities is responsible for 800.000 premature deaths and for the loss of 7,4 million years of *productive life*. However, the public is not being informed about these consequences.

The New Economics Foundation (NEF), a powerful UK *think-tank*, has even suggested that 4x4 vehicles should carry warnings similar to the tobacco ones<sup>91</sup>. NEF argues that, just as tobacco kills, the combustion of these vehicles also kills, and they contribute in a disproportionate way to climatic change. The British Medical Journal recently admitted in a paper that it would be very useful to inform consumers about the greater risks and dangers that 4x4 vehicles pose to pedestrians, in order to raise social awareness about this worrying problem<sup>92</sup>.

<sup>89</sup> The World Health Report 2002 - Reducing Risks, Promoting Healthy Life. WHO, 2002. <http://www.who.int/whr/2002/chapter4/en/index7.html>

<sup>90</sup> World Report on prevention of injuries caused by traffic. WHO, 2004.

<sup>91</sup> 4wd vehicles should have tobacco style warnings.

[http://www.neweconomics.org/gen/news\\_4x4HealthWarning.aspx](http://www.neweconomics.org/gen/news_4x4HealthWarning.aspx)

<sup>92</sup> Sports utility vehicles and older pedestrians. BMJ 2005;331(7520):787. October 8th.

<http://www.bmj.com/cgi/content/full/331/7520/787>

Global warming can cause a slow and painful death

Driving seriously harms you and others around you

Driving is highly addictive, don't start

Global warming kills

Global warming harms your baby and other children

As we have seen in the section on emissions, Directive 94/99 CE<sup>93</sup>, reflected in the Royal Decree 837/2002<sup>94</sup>, sets out the instruments to inform future buyers about the levels of fuel consumption and emissions, so that they can consider acquiring more energy efficient vehicles.

Although the data base generated by the Spanish Institute for Diversification and Energy Saving<sup>95</sup> includes detailed and comparative information on fuel consumption and emissions, this information is not widely known. Furthermore, data that theoretically should be present in every advertised vehicle is not easily accessible, since the font size is very small and can hardly be seen, unless a detailed search is carried out. The possibility of classifying the vehicles by letters and colours, according to their emissions, is interesting, but being a voluntary measure, its effectiveness is very limited.

Lastly, environmental factors are probably relatively unimportant when buying a vehicle; it is therefore necessary to increase public awareness on this matter.

Measures:

- ▶ **To run official awareness campaigns about the negative effects of motorized transport on the environment and health**, highlighting the most polluting vehicles, among them 4x4s.
- ▶ **To include warning messages in advertising on the main effect that emissions have, as well as the other impacts of road transport.** These warnings should be sufficiently explicit and visible to achieve the desired effect<sup>96</sup>.
- ▶ **To guarantee the visibility and relevance of the information regarding emissions and fuel consumption in commercials**, according to the regulations established in Royal Order 837/2002.
- ▶ **To make it compulsory for retailers to use the energy sticker (A-G)**, which is at present voluntary. The sticker should be easily seen and easy for consumers to understand, and would inform them about the efficiency of each vehicle.
- ▶ However, since this information only measures a car's efficiency in relation to other cars in the same vehicle group and not in relation to all vehicles on the market, this measure will not necessarily have an effect on buyers' attitudes towards 4x4s. Realistically, it would only change consumer habits by encouraging the purchase of more efficient 4x4s. Therefore, and as in the case of relative energy efficiency, we need to do the following:
- ▶ **To make it compulsory (rather than as, at present, voluntary) for retailers to use the energy sticker (A-G).** It should be prominent, easy to understand and should provide information on the efficiency of each vehicle.
- ▶ However, given the limitations of the present system which only ranks the vehicles according to their vehicle group, other measures are necessary:
- ▶ **To improve the labelling by making it truly comparative, that is to say by making it compulsory to compare vehicle emissions of ALL vehicles in relation to each other.** In this way, the buyer would, at a stroke, find out a vehicle's efficiency and would also find out exactly where the vehicle lies in the comparative tables listing the pollution level of the vehicles.



93 European Parliament and Council Directive 1999/94/CE, of the 13th of December 1999, in relation with fuel consumption and other emissions of CO<sub>2</sub> made available to the consumer when commercializing new vehicles. <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2000:012:0016:0023:ES:PDF>

94 Royal Decree 837/2002, 2nd of August, in relation with fuel consumption and other emissions of CO<sub>2</sub> for new vehicles. [http://www.mma.es/secciones/cambio\\_climatico/documentacion\\_cc/normativa\\_cc/pdf/rd\\_837\\_2002\\_emisiones\\_vehic.pdf](http://www.mma.es/secciones/cambio_climatico/documentacion_cc/normativa_cc/pdf/rd_837_2002_emisiones_vehic.pdf)

95 Car data base, IDAE. <http://www.idae.es/coches/index1.asp>

96 Studies confirm that bigger sizes and greater emotional content in warning messages improve effectiveness. Research on labelling. Health Canada, 2000. [http://www.hc-sc.gc.ca/ahc-asc/media/nr-cp/2000/2000\\_07bk4\\_e.html](http://www.hc-sc.gc.ca/ahc-asc/media/nr-cp/2000/2000_07bk4_e.html)

## Exclusion areas

4x4 vehicles can cause great impact on the natural environment, as mentioned earlier; they also cause other problems in the city. However, until now their use has seldom been restricted.

Measures:

- ▶ To apply and enforce existing regulations restricting their use on paths, livestock tracks, etc.
- ▶ Rural areas: to study the possibility of establishing exclusion areas for these vehicles in environmentally sensitive areas.
- ▶ Urban areas:
- ▶ **To establish exclusion areas in places where, due to their physical characteristics, 4x4s may lead to a loss of quality of life for most citizens** (in the most heavily polluted areas, in old city centres with narrow streets...).
- ▶ **To set up a system which would allow one to identify (by means of a sticker on the windscreen) vehicles that emit less than a certain amount of CO<sub>2</sub>, so that their preferential access to certain areas of the city can be established** (this sticker could be obtained, for example, when the vehicle goes along for its annual MOT inspection).

## Safety

We have demonstrated with data that, in general, 4x4 vehicles have an important weak spot when it comes to safety: pedestrians. Although this also refers to all other vehicles, those that do not pass certain minimal criteria, according to the European Safety EuroNCAP, should not be allowed to drive in our cities. Furthermore, 4x4 vehicles drivers must be aware of the limitations posed by driving a vehicle of those characteristics, not only when it comes to controlling the vehicle in dangerous situations, but also as regards the driver's lack of visibility in the city. A European regulation was recently passed to regulate additional bumpers, frequently used by 4x4 vehicles<sup>97</sup>.

Measures:

- ▶ **To promote an initiative, at European level, demanding that vehicles (four-wheel drive vehicles in particular) can only be sold if they have at least two stars in the safety certification system EuroNCAP.**
- ▶ **To reform the regulations relating to driving exams, so that people who want to drive a 4x4 will have sufficient additional training, needed to ensure a higher level of safety for other vehicles and pedestrians.** Equally, this supplementary training should include information on more environmentally friendly driving, with advice on how to save fuel.
- ▶ **To develop an information campaign which familiarises people with legal bumpers, so that they can identify the illegal ones that can endanger their health.**

## Cutting down on emissions

In 1996, the European Council set the objective of limiting CO<sub>2</sub> emissions of vehicles to an average of 120 g/km for the new European fleet. The objective was to be reached by 2005 or 2010 at the latest. But in 2007 the European Commission proposed drafting a regulation to increase this limit up to 130 g/km, in what is a clear caving in to industry's interests. Now, this regulation must be discussed, modified and approved by the European Parliament and Council.

97 European Parliament and Council Regulation 2005/66/CE, of the 26th of October 2005, concerning the use of front protection systems in vehicles, by which the Congress Regulation 70/156/CEE is modified <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2005:309:0037:01:ES:HTML>

Measures:

- ▶ To call on the European Council and the European Parliament to adopt a strong regulation limiting emissions to no more than 120 g/km on all new cars by 2012 (fleet average). This limit must be achieved entirely by improving engine efficiency. Any other measure must be used to achieve additional reductions of CO<sub>2</sub> emissions, and not to substitute such improvements. A strict regulatory framework on emissions would inevitably lead to a total fewer number of less powerful cars.

## Coherent policies

It is clear that, if the impact of 4x4s, in particular, and automobiles, in general, is to be limited, the different actions promoted from the administrations must be to discourage the use of these vehicles. In other words, infrastructure and transport policies should progress towards limiting car use, should favour passengers moving on to use other methods of transport, such as the train, and should promote the use of more efficient cars, etc. However, at present there is a huge boom in the construction of motorways, led by Spain's central Government as well as the regional governments<sup>98</sup>: this is precisely the opposite of what we should be doing.

Measure:

- ▶ To implement policies that aim to reduce the use of automobiles and four-wheel drive vehicles in particular, especially from an infrastructure and transport policy point of view.

## Leading by example

We have witnessed how 4x4s are increasingly present in the car fleets of our government bodies, especially in the various environment departments. 4x4s are chosen systematically, regardless of their use; they may not really be necessary, but they are thoughtlessly purchased because their image seems right.

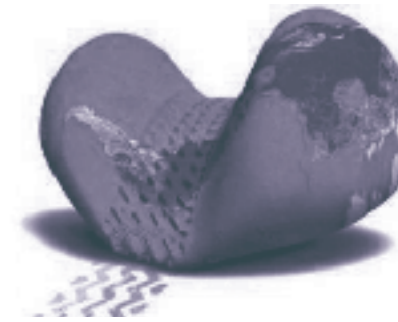
Measures:

- ▶ **Government bodies should purchase vehicles in line with their real needs.** In particular, the purchase of 4x4s should be limited to rural uses that are really necessary.
- ▶ **A multidisciplinary team should be set up at state level, including experts of ministries with responsibility for the different areas involved** (Economy, Environmental Affairs, Health, Transport, Infrastructures...), **to carry out a serious and exhaustive study to identify measures that would cause a change in consumers' habits towards choosing cleaner vehicles.**



<sup>98</sup> The Plan Estratégico de Infraestructuras y Transporte, PEIT (Transport and Infrastructure Strategic Plan), plans the construction of 6.000 km of fast ways more. Among the autonomous regions, Madrid, for example, presented in December 2007 a road plan that plans the construction or enlargement of 244 km of fast ways...

## Conclusions



It is likely that many measures and good practices proposed in this report, especially those related with higher taxes, will be considered socially unfair, arguing that they favour richer people.

Nothing could be further from the truth. In the first place, the really unfair situation is the one we have to cope with nowadays, when we all pay –the whole society– for the problems caused by excessive car use (road accidents, air pollution, noise, space occupation...). If we add up all these costs, we see that the present tax system goes nowhere near covering them.

Secondly, because behind this argument there is a trap –one that was well laid, for many years, by the automobile *lobby*–, a well accepted but mistaken belief: that the car is the universal means of transport. On the basis of this belief it is easy to argue that any increase in car tax is unfair on those on the lowest income. However, they forget that 30% of Spanish households do not own an automobile (half of them because they cannot afford it and the other half because they don't want one), or that half the Spanish population does not have a driving licence (this ratio is much higher among, women, old people and minors). So the car cannot be considered as a universal means of transport. Only public transport can be considered as such, and, in fact, many of the proposed tax measures are seen as a way to finance a better and more sustainable public transport system.

Some will also see any restriction on car or 4X4 use as an attack on personal freedom, on the right to drive wherever they please and in whichever vehicle they want. Given their own viewpoint they forget that this supposed right to drive wherever they please should not be given free rein when there are other much more important rights, such as the right to life and well-being, the right to clean air or the right to enjoy a safe, noise-free environment. All this is nothing compared with the lack of community spirit or the selfishness shown by those who use gas guzzlers in a world with increasing energy problems, with a shortage of resources or with serious problems in trying to deal cope with GHG emissions.

To conclude, we think that the most viable and fair option to address the problems associated with excessive car use (and particularly with problem ones such as 4X4s), is to impose decisive restrictions and taxes to minimize their growing impact on the global environment, on our health and wellbeing.