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# **Chief benefits for the future**

## **New jobs created with environmentally-compatible traffic**

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## Chief benefits for the future

### New jobs created with environmentally-compatible traffic

If the traffic in Germany were to be reorganised so that it was environmentally-compatible, it would create more than 200,000 additional jobs and reduce the carbon-dioxide emissions from traffic by 30%. This is the result of the research project presented by the Öko-Institut and VCD entitled 'Chief benefits for the future - New jobs created with environmentally-compatible traffic'. This study develops scenarios for mobility in the year 2010 and calculates the effects the suggested measures will have on job-creation.

Nobody can predict with accuracy the level of mobility in the year 2010, but development could take several forms. This is where the study by the Öko-Institut and VCD comes in. The authors contrast their own draft (the MOVE scenario) with the so-called TREND scenario which assumes that the current traffic policy of Germany will only change a little. Admittedly the number of journeys made in the MOVE scenario remains at the same level, but the length of the journeys and the choice of means of transport varies considerably. Indeed, the car will continue to remain the method of transportation used most with

42%, but pedestrian and bicycle traffic as well as buses and the railways close up the gap considerably. In the Öko-scenario, every citizen would leave the car behind for three trips a week and use local public transport for part of the journey twice a month, in addition to using the train more often for longer journeys.

These assumptions are by no means utopian. If in the year 2010 Germans were to travel an average of 1,500 kilometres a year by train each, that is, twice as much as today, they would reach a level which even today is normal in Switzerland. The same applies for bicycle traffic. The scenario reckons that Germans will resort to pedal-pushing to an even greater extent in the future. The distances covered by bicycle per person should double from 290 kilometres to more than 600 kilometres a year. In comparison, even today every Dutch person covers 850 kilometres a year by bicycle on average. The future scenario for car traffic assumes that in twelve years' time new cars will, on average, only need three litres of petrol per 100 km (about 94 mpg) and will be smaller, and above all, lighter.

So that the changes in the selection of means of transport desired do actually occur, certain aspects of the current traffic policy would have to change. The Öko-Institut and VCD are suggesting an appropriate mix of measures. These include investment in new buses and railways, increasing their appeal by improving the service and having modern, environmentally-friendly, railway stations and the best possible integration of connections to provide local coverage. The construction of cycleways is also in the programme, as is an improvement of the services available for people not owning a car but who wish to travel, and the promotion of car-sharing. Added to this, progress in vehicle construction and an increase of more environmentally-friendly engines e.g. for taxis should be included in the mobility-scene of tomorrow. It is obvious to the authors of the study that you can't change course without incurring a cost. The necessary measures could be financed on the one hand by redirecting public funds and on the other by gradually increasing the tax on petrol and introducing a reasonable tax on kerosene. Since the receipts from this tax reform exceed the financial requirements by a long way, other taxes or ancil-

lary wage costs could be reduced at the same time. This would mean increasing the price of petrol by initially 20 pfennigs a year, and later on 30 pfennigs a year up until the year 2010.

In order to identify what the economic and ecological consequences of such a policy would be, a so-called Input-Output-Model has been developed which predicts the interaction between the individual sectors. The study shows that a more environmentally-compatible traffic policy does offer considerable advantages. In addition to ecological relief, 338,000 new jobs would be created. In addition to the bus and train sectors, the building industry and the service sector would also benefit. However in other sectors, machine building and road building for example, 130,000 jobs would be lost so that the end result would be a net gain of approximately 208,000 jobs. The services in traffic – from the tram conductor to the employees of a Car-Sharing-Agency would be evenly distributed throughout Germany, and would be linked to the towns in the different regions of Germany. As a result they offer greater (job) security than jobs in the car industry, which are exposed to the competition in the global market to a much greater extent.

The study shows that an ecological traffic policy leads to a gain in the quality of life and creates jobs at the same time.

## Mobility and Employment

### Does one job in seven really depend on the car?

In public debate the effect of mobility on employment almost always revolves around the car. All sorts of figures are in circulation as to the actual effect the car industry really has on employment. The Automobile Industry Association (VDA) claims that one job in seven is dependent on the car. On the other hand, the German Institute for Economic Research (DIW) speaks of one job in 31. The figures differ because of the different definitions of the 'the car' and those indirectly employed as a result of car usage (car-trade, workshops, insurance companies etc).

If buses and lorries are also included by the term 'car', and if all those sectors which are affected by the use of these vehicles are included (including bus drivers in public transport), about one job in nine (11%) was connected with cars in Germany in 1994. On the other hand, if only private and company car traffic (while retaining the same definition for the 'usage' sectors) are taken into consideration, only one job in 23 is dependent upon the car (4.22%).

After remaining more or less at the same level in the 1980s, employment in the car sector increased sharply in the course of reunification. Once the East German market was saturated, the number of those employed in the car sector fell in the early 1990s to below the level of the 1980s. The car industry is particularly affected by global competition. This is why, particularly in recent years, the endeavours to cut costs have been increased considerably. This applies on the one hand to the increase in internal productivity by the companies themselves and on the other to cutting the costs of the suppliers. It is because of this, for example, that Porsche has been able to cut the assembly time per vehicle by 34%. Volkswagen AG hit the headlines above all with its head buyer, Ignazio Lopez, who is known in the trade for his restrictive (and therefore cost-cutting) buying policy. Both effects led (and lead) to reduction in jobs not only amongst manufacturers themselves but also amongst the suppliers.

The internationalisation of production in connection with the reduction of production depth gives rise to another negative effect on employment. On the 'extended workbench principle' it is no longer individual prefabricated units, but whole sub-assemblies which are manufactured abroad and supplied to the assembly plant just-in-time. In future different manufacturers will also use the same prefabricated pieces, and reduce unit costs as a result. As a result productivity will continue to increase more quickly than sales. The result is a continual reduction in jobs. Even short-term adjustments will not change this long-term TREND.

## **A comparison of the Scenarios**

The effects of an environmentally-and socially-compatible mobility scenario on jobs is worked out by comparing the MOVE (Mobility, Traffic, and Environment) scenario with the TREND development. The Öko-Institut developed the MOBIMOD computer model for this (Mobility Model for working out the effects on the Environment, Economy and Employment). It makes it possible to create a model for the effects of the traffic policy measures on the development of all carriers for different traffic purposes. Taking trend development as a basis, the changes in the individual means of transport, fuel consumption and the carbon-dioxide emissions are worked out for the MOVE scenario.

We have selected the year 2010 as the target year for comparing the scenarios. Admittedly, not all of the measures taken will have achieved their full effect by then (e.g. changes in settlement patterns, replacement of car fleets) but if we were to extend the time-horizon this would make it considerably more difficult to take stock of the effects realistically.

## **TREND Scenario - this scenario assumes that the present-day transport policy is continued as before**

We have taken the investigation of the DIW from 1994 (DIW 1994) as a benchmark for the MOVE scenario developed by the Öko-Institut and VCD. Moderate economic growth is assumed for this scenario. The DIW makes the following assumptions for the traffic policy.

- The long-distance road network will continue to be expanded. New roads will also be built within small towns.
- For the railways it will be above all the scheduled fast long distance lines which will be completed. Hardly any new lines will be added to the local networks. However, the existing lines will not continue to be thinned out. For the railways this is rather an optimistic assumption.
- Telematics will become an important part of rail and road traffic.
- Traffic-free zones and car park management in town centres will continue to exist.
- Costs of car-usage will not increase significantly.

In the TREND scenario the increase of CO<sub>2</sub> emissions continues without hindrance. Altogether the emissions from passenger traffic increase by a further 15% by the year 2010. Car and aeroplane emissions are responsible for over 90% of the greenhouse emissions from passenger traffic. The per capita emissions increase by another 10% in comparison with today. Traffic results in the climatic protection goals for Germany being missed by a long way in the year 2010.

Air pollution continues to remain a problem and will constitute a health risk to the inhabitants. The strain on health caused by noise continues to increase.

## **MOVE Scenario - for mobility which is environmentally- and socially-compatible**

### **New models**

The traffic scene can't be fundamentally changed overnight. The MOVE scenario developed by the Öko-Institut and the VCD is a realistic scenario and marks the start of a watershed in traffic policy. The following traffic policy and planning models determine the selection of strategies for the MOVE scenario.

**The compact town** - Settlement patterns and area usage determine traffic volume and usage of the various means of transport to a large degree. The existing, car-orientated regional planning will be replaced by town-and estate-development which is characterised by a greater mixture of everyday-functions (residential, work, shopping, recreation, production, management, leisure). A realignment towards compact, densely-developed mixed-usage towns and urban districts which are concentrated around rail networks will reduce total traffic levels and will make it possible for a high proportion of total traffic to be accounted for by environmental combine-traffic modes (Public transport, bicycle, pedestrian).

**Mobile without a car too** - Good connections everywhere to public transport networks with railways, buses, collective taxis etc and flexible options will lead to more people switching from private cars to public transport. The car will play a diminishing role. Less in terms of the car being rendered superfluous, but in that people make a conscious decision as to which journeys it makes sense to travel by car, and which journeys are better travelled with public transport. Modes of transport are selected according to their specific strengths and availability in each case, and are combined with each other to form links of the journey. These links could differ from journey to journey depending on destinations, time of day or weather conditions. Total mobility, that is the number of daily journeys undertaken by every person daily, will, as a rule, remain at current levels.

**Environmentally-compatible traffic** - Improved vehicle technology will lead to a marked reduction in fuel consumption, and will preserve the environment. Reduced speeds within and outside built-up areas will reduce pollutant emissions and noise pollution. Noise limits, traffic-calming measures, as well as a higher proportion of total traffic being accounted for by bicycle and pedestrian traffic will increase traffic-safety and reduce the number of serious traffic accidents.

### **Measures and instruments**

An intelligent measure-mix is required to move towards these models. The five 'INs' which kick start the new mobility policy describe the fundamental measures and instruments which underlie the MOVE scenario.

**INnovation** - New mobility services will be systematically developed and promoted. In technological development and support for cars, rail traffic, and local public transport priority will be given to the criteria energy efficiency and emission reduction.

**Integration** - The public means of transport will be networked with each other and with the supplementary modes of transport. An integrated structure of charges, which includes all the public transport services in Germany, will replace the impenetrable confusion of present charge scales. Town- and regional-planning will ensure an appropriate mixture of functions.

**Investment** - There will be new deals for train passengers, pedestrians and bicyclists to provide the mobility requirements of a growing population in a way which is more environmentally-compatible than hitherto. The concept of the railway with the local network is put into practice. Modern, flexible, and customer-friendly vehicles will replace antiquated rolling-stock on the railways. The existing railway and tram networks will be expanded and supplemented. Pedestrians and bicyclists will be given more space and attractive walkways and cycleways as a result of conversion work in the cities.

**Information** - Traffic companies or local authority administration agencies will offer all-round advice on mobility in the region and in the towns. Timetable charts will be provided at local, regional, and national level as an additional and alternative form of information. Municipal and parish authorities will expand the marketing campaigns aimed at selected target groups. Attractive deals for leisuretime activities in the region for pedestrians, cyclists, and public transport, will be developed and advertised on a selective basis. Modern communications technology will ensure improvements in the provision of customer information on the range of public transport available.

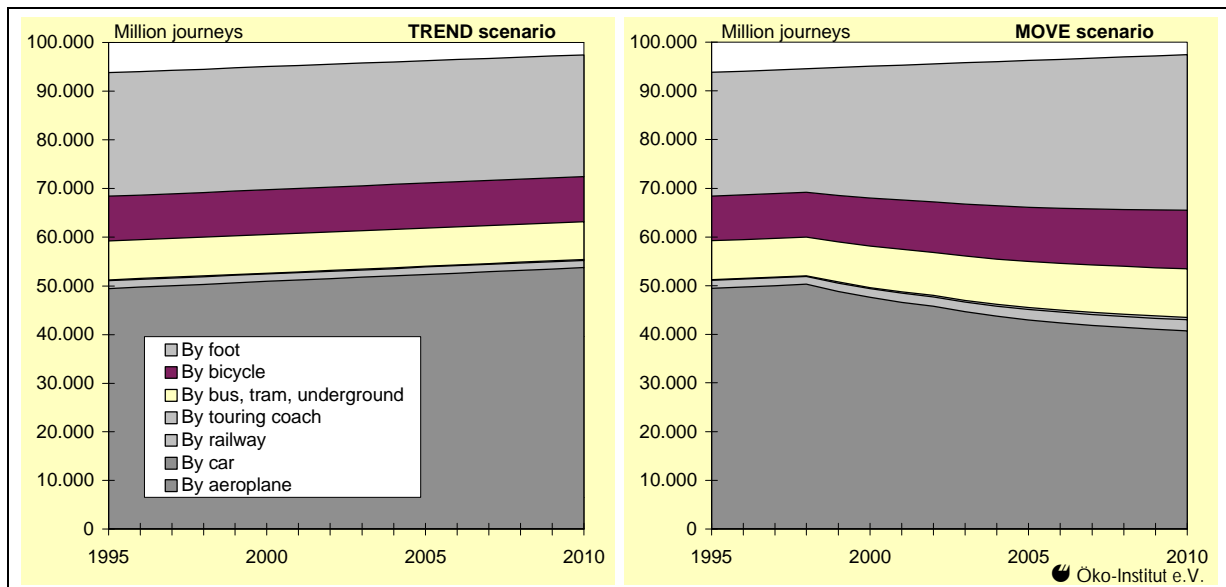
**Internalisation** - Taxes will be increased for the destruction of the environment, using up resources, and energy as part of the ecological tax reforms. The implementation of ecological tax reforms for traffic means a gradual increase in the tax on petrol and the introduction of a reasonable level of tax on kerosene. A standard lump-sum per set distance regardless of the means of transport will replace the current arrangement in which employees can offset travelling expenses against their tax liability (mileage allowance). These lump-sum allowances for set distances will be reduced step by step.

**The change of direction in traffic policy as a result of the entire bundle of measures will lead to distinct changes in the selection of means of transport and the distances travelled with them.**

## Volume of traffic

The volume of traffic is the number of all the journeys every year in Germany by all inhabitants. Both the graphs below show the development of traffic volume in the TREND and MOVE scenarios.

Diagram 1 Volume of traffic in the TREND and MOVE scenario



It is assumed that the total number of journeys will be the same in both the TREND and MOVE scenarios. In the TREND scenario, the distribution of the journeys between the different methods of travelling (modal split) only changes slightly (from current levels). The car will continue to gain in significance in proportion to the other modes of transport, whereas pedestrian traffic and local public transport will continue to lose out. In the MOVE scenario there will be a marked change in the selection of transport mode up to the year 2010. Car usage will be reduced by 10 percentage points. However with 42%, the car will remain the means of transport which is used most often. The clear winners are pedestrian-and bicycle-traffic.

In contrast to the TREND development, about three journeys less will be made a week by car in 2010. Compared with the current level that is ten car journeys less per month. As a result of the increase in the appeal of the railways, the number of trips taken by train will increase markedly, so that the volume of traffic is almost two-thirds higher than in the TREND development. In long-distance traffic as much as about 150% more journeys will be made by railway as in the TREND scenario. Then, on average, every German will travel an extra eight journeys more a year by train than today.

The volume of local public transport traffic will increase in the MOVE scenario by almost a quarter up to the year 2010 and will thereby be almost 30% more than the traffic volume in the TREND development. In the MOVE scenario in 2010, every inhabitant will travel about two more journeys by bus, tram or underground per month than in 1995.

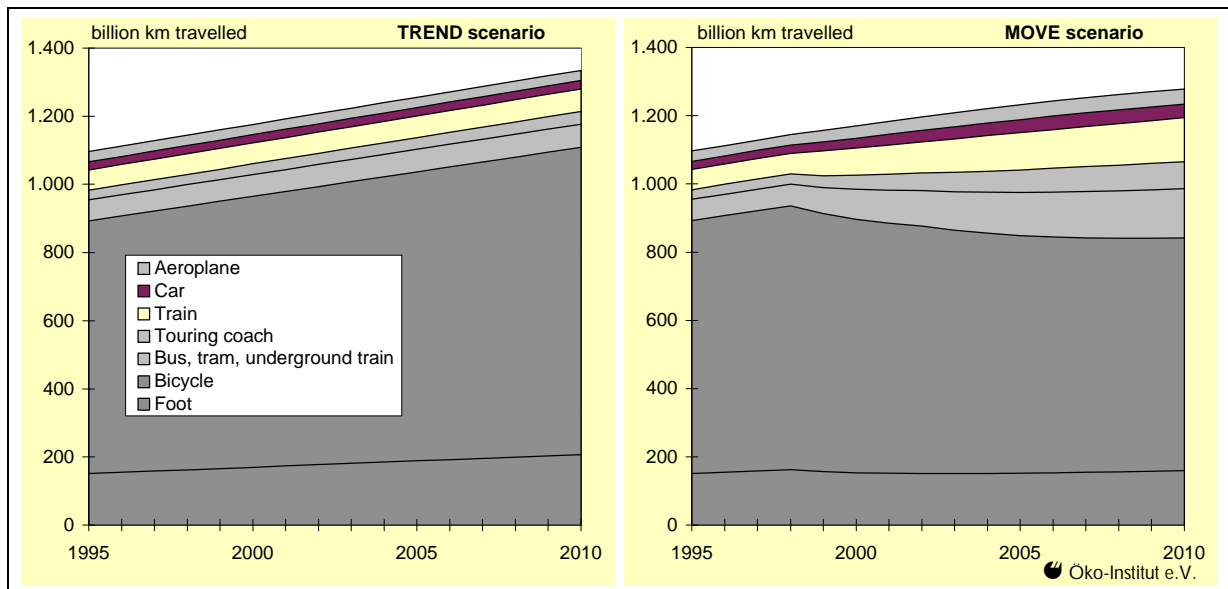
The volume of bicycle traffic in the MOVE scenario will increase by almost 30% compared with the development in the TREND scenario. Increasingly it will be possible to ride comfortably to even more

distant destinations as a result of the increase in the attraction of the bicycle as a result of having more purpose-built cycleways and the introduction of appropriate speed limits on roads. As a result the average journey travelled by bicycle in the TREND scenario of 2.7 km will be increased to about 3.4 km in the MOVE scenario. In comparison with 1995, footpaths will increase by 22% by the year 2010. On average everyone will take just under six journeys more by foot a month than in 1995.

## Traffic output

The total number of all person/kilometres travelled by all inhabitants is called the traffic output. The traffic output is worked out for personal motoring by multiplying the kilometres travelled by each car by the number of persons in it (occupancy level). Traffic output development can be shown for the TREND and MOVE scenarios in the following graphs.

Diagram 2 Development of traffic output in the TREND and MOVE scenario in comparison with today



The traffic output in the TREND scenario increases by 27% from 1994 up until 2010, whereas in the MOVE scenario it only increases by 21%. In the MOVE scenario, in comparison to TREND, 6.3% of total motorised traffic output is avoided.

In the TREND scenario the significance of the car continues to increase. The traffic output for the motorised passenger-car traffic increases by 22% from 1995 up to 2010. The growth in total distances travelled by car corresponds to the total distances travelled by the Dutch and Danes today put together. As a result of the measures of the MOVE scenario, car traffic is reduced not only in comparison with TREND but also with current levels. In the year 2010 the distances travelled by cars will be 31% below those of the TREND development. The 194 billion vehicle kilometres which are saved as compared with the TREND development correspond to the total car journeys currently driven by the countries neighbouring Germany, that is Switzerland, the Netherlands, Denmark and Austria. The distances travelled by aeroplane will remain roughly at today's levels.

The traffic output in the year 2010 will double for pedestrian traffic, as well as for bus, tram, and underground, in comparison to the TREND scenario. For bicycle, railway, and long-distance bus traffic, the increase will even be as much as between 110% and 120%. Whereas in the TREND scenario, every inhabitant will only travel about 800 km a year by train in the year 2010, the future for the MOVE scenario will be a good 1,700 km, i.e. more than twice as much. This would mean that average figures would be reached in Germany which were already normal in Switzerland in 1993 (DIW 1995, WB 37/95).

The proportion of total traffic output accounted for by public local transport will increase to a good 10%. The person/kilometres per inhabitant will increase by 111% to an average 1,542 kilometres a year. In the MOVE scenario every inhabitant will ride about 625 km by bicycle in the year 2010. Even today this figure is already 850 kilometres a year in the Netherlands.

## **The force of innovation for vehicles**

In the MOVE scenario the number of vehicles falls to 20% less than that for the TREND scenario. This is equal to a 3% drop in the number of vehicles in 1996. In spite of this considerable reduction in comparison to the TREND development, the level of vehicle-ownership in the MOVE scenario will continue to be above the current level for that in France, Belgium, and Austria.

In the MOVE scenario there will be a big incentive when buying a car to ensure that the vehicle has a low petrol consumption, since the price of petrol will increase progressively as a result of the increases in the tax on petrol. In view of the growing market for economical vehicles, the car industry will step up its efforts to achieve further technical savings. Cars will become smaller and lighter with the introduction of new materials. Altogether in the MOVE scenario the actual petrol consumption of new vehicles by the year 2010 will be half of those in the TREND development. In the year 2010 new cars will on average only need about 1 gallon to travel 94 miles.

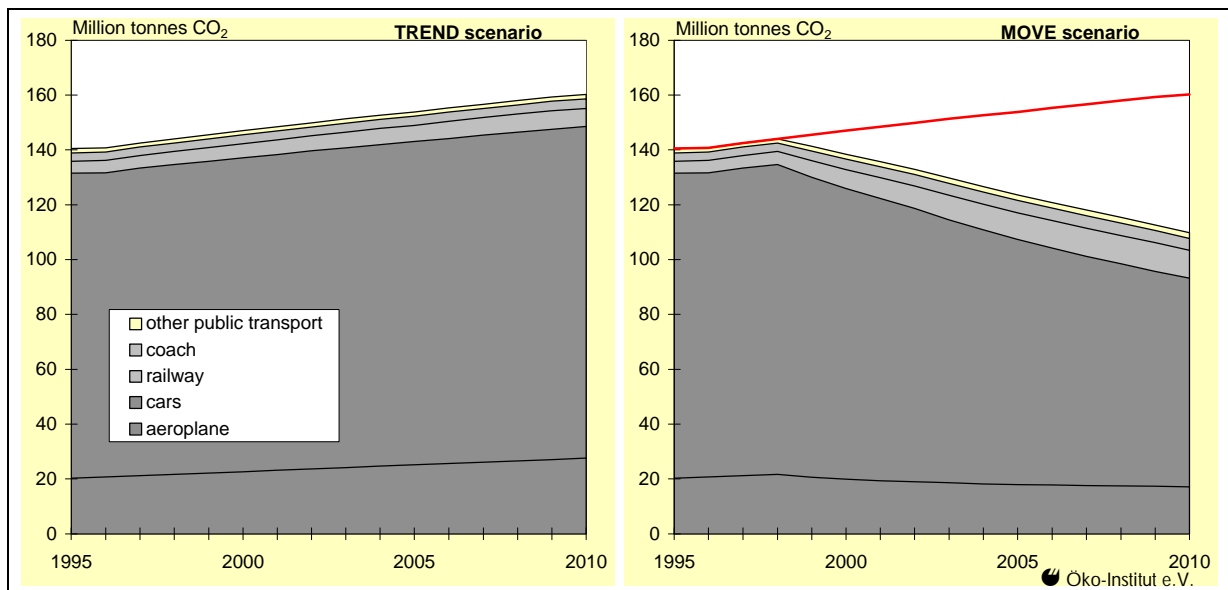
All in all, the public transport vehicle fleet in the MOVE scenario will increase by more than 50%. In the regional traffic sector light railway systems will increasingly come to dominate the market. In the MOVE scenario the demand for passenger services from local public transport will double, with an increase in capacity utilisation of 30%. The stock of railways will therefore increase by about a fifth. The vehicle park for buses will even grow by a good 60%, this equals 38,000 new buses and 5000 routes.

The introduction of a reasonable tax on kerosene will accelerate the development of even more efficient engines. We assume that the actual reduction in the consumption of fuel per person/kilometre will be 20% as against that in the TREND development up to the year 2010.

## Ecological preservation

The MOVE scenario will make a considerable contribution to the preservation of the environment. In the MOVE scenario the greenhouse emissions will drop markedly. The carbon-dioxide emissions in the year 2010 will be 30% below those in the TREND development. This means 24% less CO<sub>2</sub> than at present. The average resident in Germany will only need to cause 1.3 tons of CO<sub>2</sub> emissions per year for his/her transport requirements. That equals 26% less per capita emissions than in passenger traffic than today.

Diagram 3 Carbon-dioxide emissions in the TREND and MOVE scenario



As a result of the decrease in motorised traffic, the reduction in speeds and the measures for noise prevention, the quality of life will improve in the MOVE scenario. Noise pollution from passenger traffic will be below the level which constitutes a threat to health once more.

The requirement for car parking space will grow in the TREND scenario by an area of 106 km<sup>2</sup>. In the MOVE scenario this requirement will be 125 km<sup>2</sup> less than that in the TREND scenario. This is the equivalent of an area bigger than Darmstadt.

## The future of work

### The effect on jobs

As a result of the marked changes in the development of traffic in the MOVE scenario, the demand for transport goods and services (i.e. the demand for fuels, cars or other public transport services) will change. There will be a redistribution of the national demand (in Germany) between the different sectors besides as a result of tax measures and the reimbursement of the resultant income to the public authorities as well as the changes in state expenditure on traffic infrastructure and on public transport.

Altogether there will not be a change in the level of total economic demand in the MOVE scenario. Total consumer demand will however be distributed differently amongst the existing economic sectors. This redistribution will be very significant on account of the effects it has on employment for two reasons:

1. The intensity of labour i.e. the overall work output which has to be applied in order to produce one unit of production differs in the individual sectors. If the same additional amount is invested, this will lead to fewer new jobs being created in sectors with less-intensive labour than in labour-intensive sectors.
2. Import intensity i.e. the quantity of imported raw materials, primary and intermediate products, which flow into the production of a sector likewise differs from sector to sector. If the demand from a sector with a high import intensity is transposed onto a sector with a low proportion of imports, then the demand for labour in Germany will increase. All in all, more will be manufactured in Germany and less will be imported.

Both these characteristic values differ considerably between the different industries of a national economy, so that another distribution pattern of demand to sectors of the national economy can lead to distinct changes in overall levels of employment.

The changes in demand between the TREND scenario and the MOVE scenario were modelled in detail in the study. On the basis of this the changes in employment can be calculated with the aid of an Input-Output Model not only for the entire Germany economy, but also for the 58 sectors in the Germany economy. This method also takes into account the subsequent effects which the additional demand in one sector has on the other sectors interlinked with it. This means that a higher demand for cars also increases the demand for iron and steel, plastic components and other primary and intermediate products of the car industry. In doing so the study also takes into account the different increases in productivity which are expected in the different sectors in the coming years.

### 200,000 additional jobs

Altogether, 338,000 new jobs would be created by the measures in the MOVE scenario. Against these, 130,000 jobs would be lost. All in all, this thereby gives rise to a positive balance in excess of 200,000 additional jobs. The average rate of unemployment would therefore fall by about half a percentage point.

The increase in employment as a result of mobility which preserves the environment more has three causes:

1. Unpaid work by companies/individuals for themselves is replaced by paid work which is brought in. In public transport the customer lets himself be driven and looked after. Mobility is provided on a commercial basis, whereas personal motoring represents a form of unpaid working for oneself, which doesn't contribute towards paid employment. All told, this leads to a higher proportion of paid employment.
2. The demand in sectors with a low employment input such as the car industry, for example or the petro-chemical industry, will fall, whereas it would rise sharply in the labour-intensive sectors such as the railway or local public transport. Here too, the overall effect will be an increase in employment.
3. Mobility which relies heavily upon the car requires much more imports than the mobility which underlies the MOVE scenario. As a result of a fall in demand for imports, in the MOVE scenario funds will be released instead of flowing out of the country which will be spent within Germany and will increase the level of employment within Germany.

In the MOVE scenario the tax revenue from increasing the tax on petrol and kerosene tax which is not required to finance traffic measures can be divided up amongst other sectors of the national budget, and spent by those sectors in accordance with average consumption patterns. Various analyses show that other forms of tax expenditure even lead to significantly higher beneficial effects on employment. If, for example, the tax revenue is used to reduce the wage ancillary charges (e.g. national insurance contributions) the entire net employment effect can possibly turn out to be twice as high.

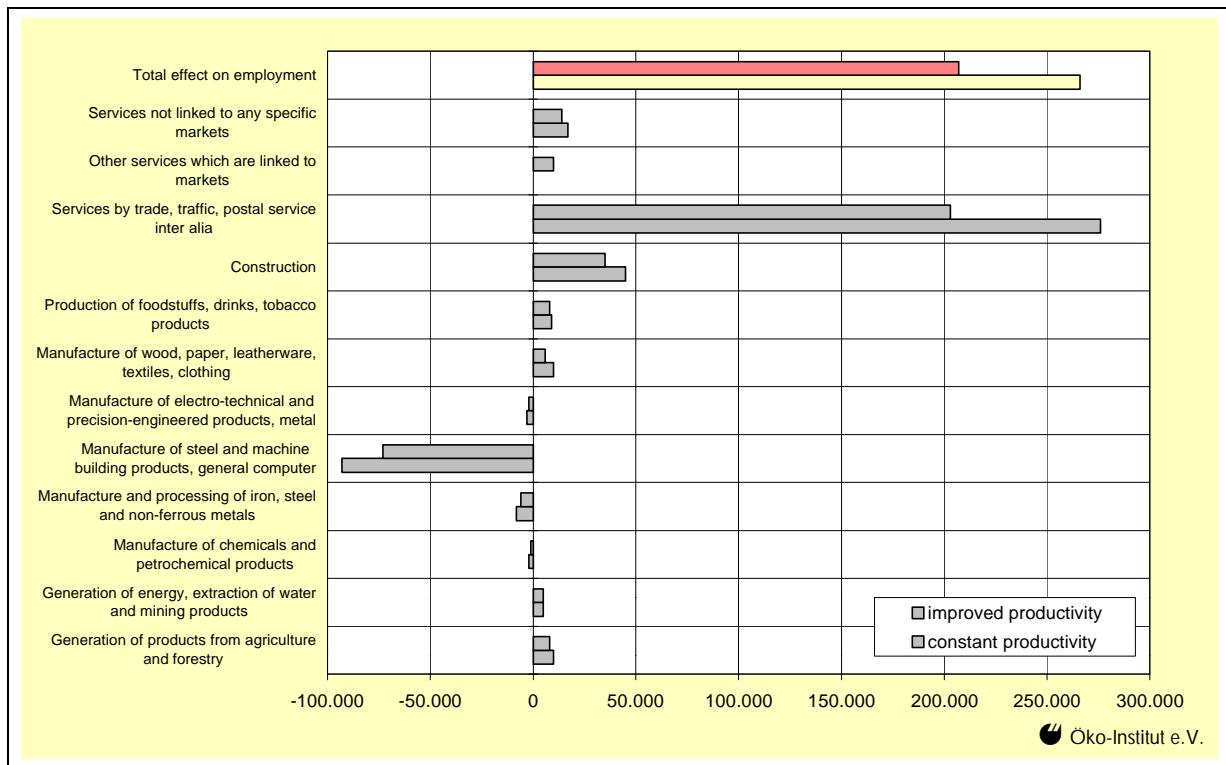
## Winners and losers in the change of direction for traffic

The implementation of the MOVE scenario will affect individual sectors in different ways. The most beneficial effect on employment will be in the railway sector (an additional 122,000 jobs) and in the 'Other Traffic' sector, to which local public transport and touring coach transport belong (just under 100,000 jobs). There will be a marked increase in the construction industry too (an additional 33,000 jobs). Within this industry there will be a distinct shift in investment activity from road construction to the rail infrastructure and the construction of railway stations or stops, which will lead to restructuring within the building industry. But a large number of other sectors such as the hotel trades, foodstuff production or the other services will record a growth in employment as a result of the redistribution of demand. Altogether, about 67,000 additional jobs will be created in the various remaining sectors. Above all, it will be the road construction industry which will suffer a loss, and the number of jobs lost will be almost 75,000. The insurance and commercial industries will also see a loss of jobs.

The new jobs created in the MOVE scenario will be distributed throughout Germany and will not be concentrated at a small number of locations. The traffic services tied to specific persons, times and locations cannot be relocated out of Germany, even in the face of global competition. For this reason public transport is far less exposed to the threat of global competition than the car sector is, and in which the relocation of production outside Germany has, for various reasons, increased sharply.

On the other hand the job losses will be much more concentrated geographically. Admittedly, the car industry is located throughout Germany, but at Bundesland level there is a concentration of the car industry. For this reason regional hardship at the key locations of the car industry cannot be ruled out in spite of the slight fall in unemployment in the MOVE scenario. Concentrated measures would be necessary here in labour market and structural policy to contain the detrimental effects.

Diagram 4 Average annual effect of the MOVE scenario on the individual sectors of the German economy



## Result

'Chief benefits for the future' shows that the significance of the car industry as a secure guarantee of jobs is overestimated. Admittedly, the car industry will remain an important economic factor for the foreseeable future, but the number of jobs it provides will fall. 'Jobless growth' and the relocation of production outside Germany will dominate the scene for the car manufacturing industry. In particular, the study refutes the suggestion that practical steps in the direction of an ecological watershed in terms of traffic policy would destroy jobs. The opposite is the case. Even in conservative estimates, more than 200,000 new 'globalisation-proof' jobs would be created. Altogether the measures in the MOVE scenario create 338,000 new jobs which would be lost. Set against this figure are the 130,000 jobs which would be lost. This therefore gives rise, on balance, to more than 200,000 additional jobs.

What is especially important is that the MOVE scenario is not planning a utopian vision of how traffic should be for never-never land but merely represents 'small steps' which can be achieved. These could help preserve the environment in the coming years and increase the quality of life of the individual significantly. Along the development path aimed at, every citizen would, for example, double the distance he travels by train. This is not unrealistic nonsense, but is a highly accurate reflection of the current situation in Switzerland. In terms of bicycle traffic, the intended proportion travelled by bicycle in the Netherlands is, even today, 200 kilometres more than the target figure for Germany.

## Efficiency instead of going without

The number of journeys completed is the same in both scenarios, as mobility is not curtailed in the ecological MOVE scenario by reducing the number of journeys made, but journeys are simply organised more efficiently. The links of the chain forming the trips will become shorter. Instead of going shopping in the supermarket built on a greenfield site, the customers will increasingly buy locally once more, for example. To this extent traffic reduction is not a strategy achieved by going without, but by increasing efficiency. The traffic system will become more efficient, since a lower traffic output will satisfy the same mobility requirements.

As a result of these effects, it will be possible to reduce the consumption of resources and carbon-dioxide emissions by almost a third (31.5%) compared with the TREND scenario. This is attributable, above all, to the choice of mode of transport in the MOVE scenario being clearly moved in favour of non-motorised traffic and public carriers (bus and train). Besides which vehicles with distinctly higher levels of energy-efficiency will prevail for all types of vehicle. The networking and capacity utilisation of the carriers will be improved considerably.

The objective drafted by the German Government of a 25% reduction in CO<sub>2</sub> emissions could be achieved with our scenario.

From the perspective of the German economy the traffic system will also be economically more efficient since the same demand for mobility can be covered at a much lower cost. The money 'saved' i.e. not spent on transport, by personal budgets will be available for increased expenditure on other consumer goods.

## A triple bull's eye

The study to hand shown that the measures which underlie the MOVE scenario benefit society in three ways at the same time.

1. At an ecological level by reducing environmental pollution and the future risks associated with it.
2. At an economic level by having more efficient mobility.
3. At a socio-political level by reducing unemployment and the attendant social problems.

The cliché which is put forward again and again that a more ecological form of mobility would ruin the Germany economy is disproved by this study.