

## 12. Traffic across Öresund

### Ten years with a fixed link

1 July 2010 is the ten-year mark since the Öresund Bridge opened. The considerable improvement in accessibility across southern Öresund accelerated an integration process between both sides of the sound, and mainly between the two largest cities of the region - Copenhagen and Malmö. All traffic has increased, but commuting traffic has definitely risen in particular.

### Ferries in the north - bridge in the south

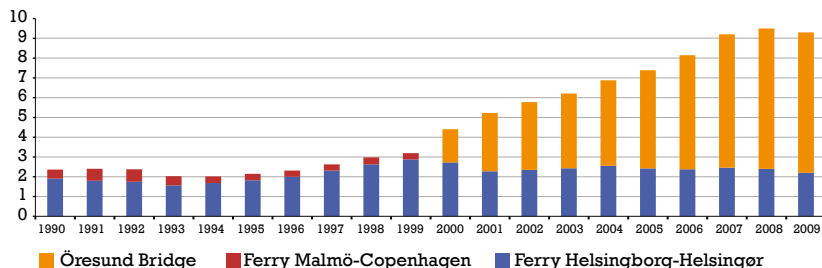
During the 1990s, between two and three million cars crossed Öresund. In 2009 the number of vehicles increased to 9.3 million; at the same time, 35.6 million travellers crossed Öresund by car, bus, train or ferry.

After a minor downturn in traffic in the beginning of the 1990s, the number of cars

crossing Öresund increased by an average of ten percent per year from 1995 to 1999. New routes, more departures, lower prices and economic growth in Denmark and Sweden were the reasons for the increase in traffic. The opening of the Öresund Bridge resulted in an even greater rise in traffic by 43 percent, and all traffic across Öresund grew by an average of ten percent each year during the period 2001-2007.

### Traffic across Öresund 1990-2008

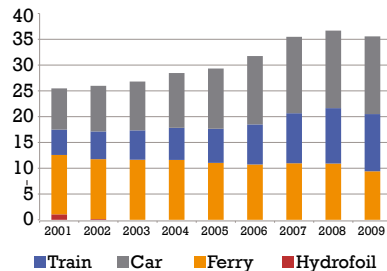
Millions of vehicles



Source: Shippax and Öresund Bridge

### Travellers across Öresund

Millions of travellers



Source: Shippax and Öresund Bridge

However, 2008 was a particular year, since traffic across Öresund then increased by three percent - which meant an increase of 5.1 percent on the Öresund Bridge and a drop of 2.6 percent for ferry traffic between Helsingborg and Helsingør. This tendency remained in 2009, when all traffic across Öresund dropped by 1.2 percent. The Öresund Bridge had a slight rise of 0.5 percent, while ferry traffic dropped by 6 percent. The weak growth of these two years clearly marks the recession that had hit both Denmark and Sweden in the wake of the financial crisis.

Passenger cars make up the greater share, 92 percent, of all traffic across Öresund, while truck traffic comprises 7 percent and bus traffic one percent. 76 percent of all road traffic across Öresund is over the Öresund Bridge. 78 percent of passenger car traffic chooses to pass Öresund via the Öresund Bridge, while the ferries between Helsingborg and Helsingør have more than half (54 percent) of the truck traffic. 74 percent of all persons travelling over Öresund do so via the Öresund Bridge, either by car or by train.

### **Traffic across the Öresund Bridge**

182 million people have crossed the Öresund Bridge either by train or car since it opened in 2000 - 111 million by car and 71 million by train. This is comparable to all of Denmark's and Sweden's populations taking the trip across the Öresund Bridge as many as thirteen times each during the first nine years. The 111 million passenger car travellers can be broken down into 48 million vehicles during the period 2000-2009.

### **Train traffic**

Train traffic has undergone an amazing development. From 2001 to 2009, passenger rail traffic has increased from 4.9 million to 11.1 million passengers - an increase of 125 percent. In 2009, 56 800 passenger trains and 7 250 freight trains crossed the bridge.

The Öresund train has functioned mainly as an internal means of transport within the region, with 90 percent of the passengers travelling regionally. Four of five train passengers live in Sweden and one in five in

Denmark. A very small percentage of passengers are foreigners.

Commuting is also done by rail, where about 60 percent of the travellers on the Öresund train are commuting to work or to their studies. The remaining 40 percent are mostly leisure travellers, while a small percentage are travelling on business or holiday.

Passenger rail traffic is mainly run by DSB-First, which took over operations of the Öresund train in January 2009. Freight traffic by rail on the Öresund Bridge is divided into several different companies. On the Danish side, the train network goes past Copenhagen's Kastrup airport, via Copenhagen's central station and Nørreport to Helsingør. On the Swedish side, the network branches out from Malmö to Gothenburg, Kalmar and Karlskrona. The city tunnel through the central parts of Malmö, that opens at the end of 2010, will shorten travel time between Copenhagen's central station and Malmö central station by five minutes.

### Car traffic

Expectations were high for car traffic when the Öresund Bridge opened. Perhaps even a little too high for reality to live up to them. After a warm summer month when many people crossed the bridge just to do so, traffic during all of the autumn 2000 dropped and a bottom level was set on 1 January 2001 when an average of 4 700 vehicles crossed the bridge per day.

The picture today looks entirely different. The amount of traffic crossing the link a cold day in January 2001 is the same as the morning rush hour today between 6 and 9 am. In 2009, an average of 19 500 vehicles used the bridge per day. This is 141 percent more than in 2001, the first full year that the Öresund Bridge was in operation. During the period 2001 to 2007, traffic rose between 10 and 17 percent per year. In 2008 this trend was broken when the increase in traffic slowed down during the second half of the year, as a result of the economic slump that hit both Denmark and Sweden in the wake of the financial crisis.

All kinds of traffic has increased during the first ten years of the Öresund Bridge, but commuting has been particularly remarkable. Today, commuting accounts for 42 percent of all passenger car traffic, compared to 5 percent in 2001. Two factors can explain this development. First, the significant price differences in housing on the Danish and Swedish sides of the sound have led many Danes to move to Öresund SE. Second, the economic boom in the Danish economy up until 2007, which led to a labour shortage in Denmark, was partly solved by many Swedes getting jobs in the Copenhagen area, thus becoming commuters. These Swedes have largely remained on the Danish labour market and are today a natural part of by and large every workplace in the capital city area.

The regional business traffic comprises 18 percent of passenger car traffic on the Öresund Bridge. The business sector has begun to take advantage of the potential of the Öresund Bridge by setting up offices and

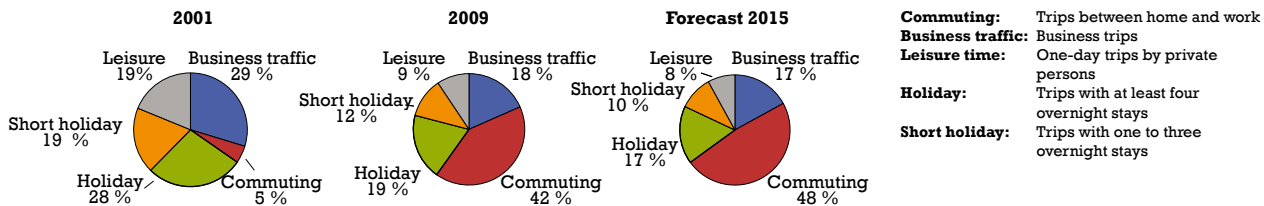
departments on both sides of the sound. Sales across Öresund have also increased.

Holiday and leisure traffic accounts for the remaining 40 percent of passenger car traffic on the Öresund Bridge. Along with the financial crisis, another phenomenon marked the traffic across the Öresund Bridge. The Danish crown is fixed to the euro, while the Swedish crown floats. Because small currencies are subject to pressure in a financial crisis, the Swedish currency depreciated in value. This has affected Öresund traffic in that many Danes crossed to the other side of Öresund for shopping, and retail trade in Malmö has benefited greatly from the many Danish customers.

### Starting point and destination for trips across Öresund Bridge

The regional traffic over the bridge between the Danish and the Swedish part of the Öresund region comprises 78 percent of all passenger car traffic. International traffic over the Öresund Bridge which neither starts nor ends within the Öresund region only makes

## Purpose of travel with passenger car over the Öresund Bridge



Source: Öresund Bridge

## Travel flows for passenger car traffic across the Öresund Bridge 2009

STARTING POINT	DESTINATION								Total
	Copenhagen	The rest of Öresund DK	Fyn/ Jylland	Europe	Öresund SE	Rest of Sweden	Bornholm	Norway / Finland	
Copenhagen					7 %	2 %	4 %	0 %	14 %
The rest of Öresund DK					2 %	1 %	1 %	0 %	5 %
Fyn/Jylland					1 %	1 %	1 %	0 %	3 %
Europe					0 %	1 %	0 %	0 %	2 %
Öresund SE	54 %	9 %	1 %	5 %					68 %
Rest of Sweden	2 %	1 %	1 %	4 %					7 %
Bornholm	0 %	0 %	0 %	0 %					1 %
Norway/Finland	0 %	0 %	0 %	0 %					0 %
<b>Total</b>	<b>56 %</b>	<b>10 %</b>	<b>2 %</b>	<b>9 %</b>	<b>11 %</b>	<b>5 %</b>	<b>7 %</b>	<b>1 %</b>	<b>100 %</b>

Source: Öresund Bridge. Footnote: Information has been collected from questionnaire surveys and can thus be statistically insignificant.

up seven percent of passenger car traffic on the bridge.

The distribution of travellers from Denmark and Sweden respectively depends on the purpose of the trip. 97 percent of the commuters and 86 percent of the business travellers reside in Sweden, while 40 percent of holiday travellers live in Denmark. The Danish travellers are only in majority regarding short holiday and holiday traffic, namely 60 and 49 percent respectively, compared to 36 and 39 percent of Swedish travellers.

### Traffic forecast

The Øresundsbrokonsortiet<sup>1</sup> produces a forecast every year for the future traffic on the bridge. In recent years they have produced three scenarios for road traffic: a growth scenario, a stagnation scenario, a middle scenario.

<sup>1</sup>Øresundsbro Konsortiet is a Danish-Swedish company that own and operate the Øresund Bridge.

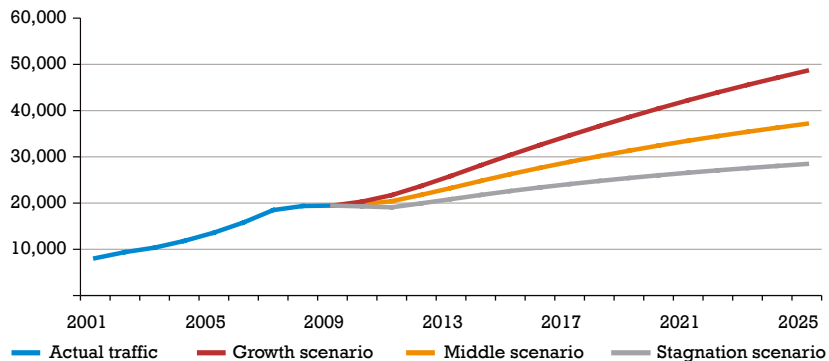
The current forecasts have taken the economic downturn into consideration regarding development in 2009, and understand that it will affect Denmark and Sweden in the coming years. In the longer term, the basic factors for growth - that is, development of the labour and housing markets and

the population basis - will not be affected by the crisis.

The middle scenario seems to be the most likely one, and income from road tolls are included in budget planning of the Øresundsbrokonsortiet. The middle scenario is

### Traffic scenario - daily traffic across the Øresund Bridge

Vehicles



Source: Øresund Bridge

often named as the so-called traffic forecast, and in those cases no reference is made to a particular scenario, it is the middle scenario that is referred to.

The middle scenario is based on the assumption of a positive regional development and a relation where there are still economic differences between Malmö and Copenhagen concerning salaries and housing costs.

The growth scenario mainly differs from the middle scenario in that it is assumed that the regional Öresund integration increases even more. A long-term European economic boom will further contribute to making this scenario a reality.

The stagnation scenario is the worst conceivable scenario, where growth in the regional integration stagnates within the course of only a few years. At the same time, a longer economic crisis or general limitation of car traffic could also postpone development towards this scenario.

In the year 2025, daily traffic across the bridge (today at 19 500) will have increased to 37 200 cars per day according to the middle scenario. By 2040 this figure is expected to increase even more – to 40 000 cars per day.

#### **Capacity of the Öresund Bridge**

The motorway of the Öresund Bridge has a capacity for about 4 000 cars per hour in each direction. In particular, the capacity in the tunnel will be the limiting factor for traffic on the bridge, but before congestion on the link itself becomes critical, there will be a capacity problem on the access roads.

Train traffic across the Öresund Bridge varies between high-frequency passenger traffic and international freight trains, evenly distributed during the day, as well as sporadic passenger and freight trains. Mainly because the different traffic forms, the scheduled traffic during rush hour is limited to about ten trains per hour in each direction.

Within several years, train traffic every five minutes will be needed during rush hour between Malmö and Copenhagen to handle the increasing numbers of commuters. However, there will be no capacity problems on the bridge itself with optimal traffic planning. On the other hand, the capacity problem at the Copenhagen airport, on the Södra Stambanan in Skåne and the rail section in central Copenhagen will be further worsened in the near future if capacity does not increase.

## 13. Commuting across Öresund

### Number of commuters

In 2009 about 20 000 persons commuted daily between their homes and workplace on the other side of Öresund. Most of these persons, or 18 000, commuted via the Öresund Bridge.

Since the opening of the Öresund Bridge in 2000, commuting across Öresund has in-

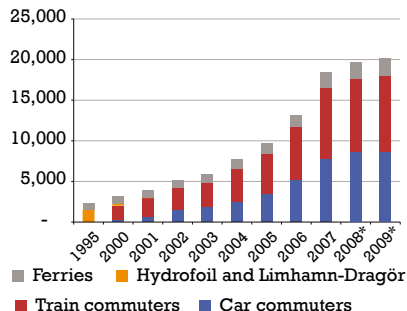
creased by about 600 percent. The increase in the number of commuters across Öresund was exceptionally large during 2006 and 2007, when both the Danish shortage of labour and differences in housing prices accelerated the movements across Öresund. However, in 2008 and 2009 the financial crisis and the resulting economic downturn caused a halt to the nearly explosive in-

crease in commuting. In 2008 and 2009, the number of commuters across the Öresund Bridge increased by six and two percent respectively.

### Commuter composition

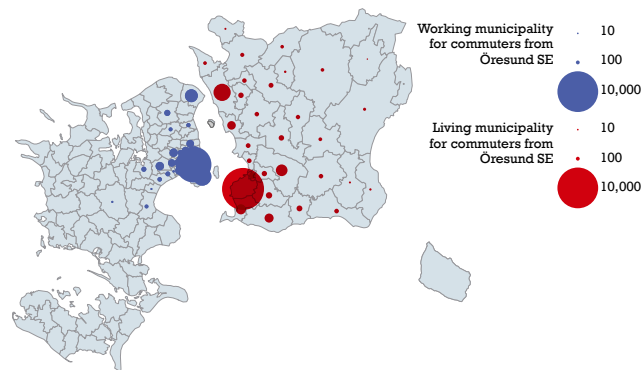
All of 97 percent of the commuters live in Sweden and work in Denmark. 48 percent of the commuters drive their cars over the

### Number of commuters across Öresund



Source: The Öresund Bridge. Footnote: \* 2008 and 2009 is predictive analyses made by the Öresund Bridge

### Commuters from Öresund SE to Öresund DK 2007



Source: Örestat. Map: Region Skåne

### Commuters from Öresund SE by place of residence and work 1999

	Copenhagen Municipality	The surroundings of Copenhagen	North Zealand	Bornholm	East Zealand	Western and south Zealand
<b>Southern Skåne</b>	45 %	6 %	3 %	0 %	1 %	55 %
<b>North-east Skåne</b>	2 %	0 %	0 %	0 %	0 %	3 %
<b>North-west Skåne</b>	13 %	5 %	24 %	0 %	1 %	42 %
<b>Total</b>	59 %	11 %	27 %	0 %	1 %	100 %

Source: Örestat

### Commuters from Öresund SE by place of residence and work 2007

	Copenhagen Municipality	The surroundings of Copenhagen	North Zealand	Bornholm	East Zealand	Western and south Zealand
<b>Southern Skåne</b>	54 %	21 %	3 %	0 %	2 %	81 %
<b>North-east Skåne</b>	0 %	0 %	0 %	0 %	0 %	1 %
<b>North-west Skåne</b>	5 %	3 %	10 %	0 %	0 %	18 %
<b>Total</b>	59 %	24 %	13 %	0 %	2 %	100 %

Source: Örestat

### Öresund commuters by country of residence

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008*	2009*
<b>From Öresund DK to Öresund SE</b>	166	188	204	281	539	533	536	692	734	750	623	661	676
<b>From Öresund SE to Öresund DK</b>	2,130	2,365	2,584	3,010	3,751	4,697	5,683	7,160	8,783	12,744	17,890	18,973	19,412
<b>Total</b>	2,296	2,553	2,788	3,291	4,290	5,230	6,219	7,852	9,517	13,494	18,513	19,634	20,088

Source: Örestat

Footnote: 2008 and 2009 is predictive analyses by the Öresund Bridge

### Öresund commuters by country of birth

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
<b>Denmark</b>	884	938	929	1,208	1,822	2,419	3,063	3,811	4,545	6,011	7,383
<b>Sweden</b>	1,212	1,362	1,569	1,753	2,004	2,187	2,329	2,804	3,445	4,804	7,213
<b>Other countries</b>	200	253	290	330	464	624	827	1,237	1,527	2,679	3,917
<b>Total</b>	2,296	2,553	2,788	3,291	4,290	5,230	6,219	7,852	9,517	13,494	18,513

Source: Örestat

bridge, while the rest travel by rail. Danes who have moved to Öresund SE choose to take their cars to work to a greater extent than Swedes do.

Even though most of the commuters live in Sweden, there are many Danes who also commute across Öresund. 37 percent of the Öresund commuters are Danes while 40 percent are Swedes. Others were born outside of Sweden and Denmark.

The large percentage of Danes is because the economic incentives to move to Sweden have been very strong up until the middle of 2007, when Danish housing prices began to drop. From 2005 onwards, Danish companies began to seriously recruit Swedish labour due to a labour shortage in Denmark. Due to the demographic development of Öresund DK and Öresund SE, it is expected that the labour supply will become a more serious problem on the Danish side of the sound than the Swedish one. Thus it is assumed that future commuting will be driven

by labour market integration to an even greater extent and not as much by the housing market integration, as was the case in the years following the opening of the Öresund Bridge.

#### Geographic distribution of commuters from Öresund SE

The most important commuting flow from Öresund SE to Öresund DK has mainly de-

veloped between Southern Skåne and Öresund DK. While commuting from Southern Skåne to Öresund DK comprised 55 percent of all commuting in 1999, the corresponding figure in 2007 was an entire 81 percent.

#### Industrial breakdown among commuters from Öresund SE to Öresund DK.

The majority of Öresund's commuters from

#### Industrial breakdown among commuters from Öresund SE to Öresund DK, 1999 and 2007

	1999	2007	Change	
			Absolute	Percent
<b>Agriculture, Fishery and mining</b>	6	41	35	583 %
<b>Industry</b>	222	1,637	1,415	637 %
<b>Energy and water supply</b>	6	46	40	667 %
<b>Construction</b>	174	732	558	321 %
<b>Wholesale and retail trade</b>	334	3,265	2,931	878 %
<b>Hotel and restaurant industry</b>	128	1,472	1,344	1,050 %
<b>Transport and communication</b>	682	2,822	2 140	314 %
<b>Banks and financial operations</b>	80	725	645	806 %
<b>Leasing and real estate brokerage</b>	287	3,785	3,498	1,219 %
<b>Public service and personal services</b>	70	450	380	543 %
<b>Education</b>	102	557	455	446 %
<b>Health and medical care</b>	374	1,667	1,293	346 %
<b>Sanitation, associations and culture</b>	119	687	568	477 %
<b>Information missing</b>	0	4	4	
<b>Total</b>	2,584	17,890	15,306	592 %

Source: Örestat

Öresund SE work in the Danish service sector. This reflects the structure of industry in the Copenhagen area, with a strong emphasis on business services, research and development (R&D) and trade. Trade and business services have seen especially strong increases in personnel from Öresund SE since 2000.

Before the bridge opened, many Swedes were employed in the transport industry. This was especially due to the Copenhagen airport having such great importance. However, the number of Swedes employed in the Danish transport industry has not increased as much as other industries; in 2007, leasing and real estate sales were the industries having the most Swedish employees. Compared to workplaces on both sides of Öresund, there are relatively many commuters coming from Öresund SE in trade, hotels and restaurants, transport and real estate, while there are relatively few in construction, public administration, teaching, and health and medical care.

78 percent of all commuters from the Swedish side are employed in the private sector, while the corresponding figure for commuters from the Danish side is 70 percent. It should be said that only 65 percent and 64 percent of workplaces on the Danish and Swedish sides respectively are in the private sector.

Many commuters are highly educated. All of 65 percent of commuters who live in Denmark have a university education, while the educational competency differs somewhat with the commuters who live in Sweden, where 38 percent have a university education and 47 percent have an upper secondary education or vocational training. This can be compared to only about 30 percent

of those aged 20–64 in both Öresund DK and in Öresund SE who have a university education.

Concerning commuters' sex and age distribution, there are only two women to every third man who commute from Öresund SE to Öresund DK.

People in the youngest group aged 16–24 are commuting the most, and particularly the young women. These young people commute four times more often than gainfully employed persons aged 45–64 do.

#### Educational level broken down by area of residence

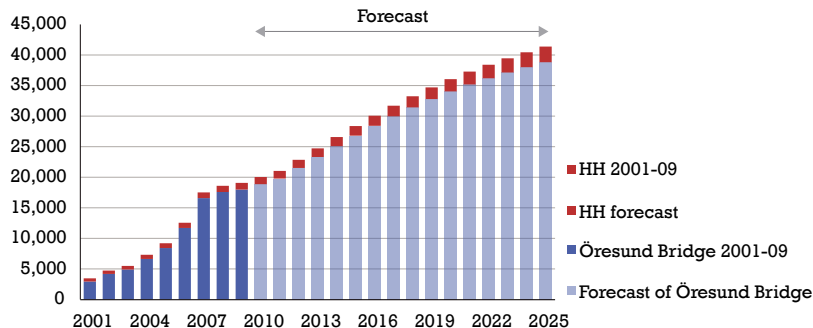
	Öresund DK	Öresund SE
Compulsory school	6 %	14 %
Upper secondary or vocational training	25 %	47 %
Higher education or university education	65 %	38 %
Unknown education	3 %	2 %

### The commute up to 2025

In the most recent traffic forecast of the Öresund Bridge, commuting to work is expected to increase to 39 000 persons in 2025. The economic downturn of today is predicted to generate a low increase in commuting in the coming years, but in the long term commuting to work is expected to increase due to the demographic development. The proportion of older persons is increasing much quicker in Öresund DK than in Öresund SE, but towards the end of the 2020s the dependency ratio is about the same on both sides of the sound. However, the age group between 20 and 64 years in Öresund SE is expected to increase more quickly, and thus it could be in the Danish interest to recruit more labour from Öresund SE.

The significant differences in housing prices between Öresund SE and Öresund DK have already decreased, and will probably even out in the long run, but it is still economically more favourable for many Danes to live in Öresund SE and commute to work

### Actual and expected commuting to work across Öresund Bridge 2001-2025



Source: Öresund Bridge, (HH is the ferry route between Elsinore in Denmark and Helsingborg in Sweden).

in Denmark. However, the price differences are not as sharp as during the first ten years of the bridge.

**Comments on the statistics:**

The numbers of commuters across the Öresund Bridge are counted as the number of full-time commuters, that is, persons who commute five times a week between their homes and places of work. This definition has been chosen because it is based on the number of trips across the Öresund Bridge by either car or train, since there are no statistics compiled for commuter travel frequency. Historically, this method of calculation provides results very near to the register-based commuting statistics compiled by Statistics Denmark and Statistics Sweden, which are not released until about two years after the time of measurement. The register-based commuting statistics for Öresund follow the same definition used to describe the commuting between municipalities in both Denmark and Sweden. The commuting between Elsingore-Helsingborg is an estimate based on the register-based commuting statistics.