Towards a Megaregion of Western Scandinavia

West Sweden—Facts and key policy challenges

January 2017
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Foreword

This report is a common background material for West Sweden taken forward in the process of the OECD Territorial Review for Megaregion Western Scandinavia, also including the Oslo region and Skåne/Öresund. It presents the main socio-economic trends, unused potentials, challenges and governance framework for West Sweden. Most of the facts and analysis comes as a result of an extensive questionnaire that should be answered before OECD starts their analysis. The OECD team will now start their study with data analysis and study visits in the respective regions. Most of this work will be done during the first half of 2017. The final OECD report will be presented to the OECD Regional Development Policy Committee (RDPC). Upon approval by RDPC in December 2017, the report will be published and released as an official OECD publication.

The West Sweden report has been informed by and the conclusions discussed with a reference group representing all parts of society in West Sweden. We thank them sincerely for their contributions this far. The content of this report is the responsibility of the financing partners; Gothenburg City, Region Halland, Region Västra Götaland and the Gothenburg/Oslo cooperation.

Besides answering the OECD questions we have chosen to give some extra room for happiness, trust, democratic participation, inclusive growth, climate, experiences and culture. With visions like The Good Life and The Best Place to Live, these are important areas for us where we hope that we can inspire OECD to an interesting discussion.

Gothenburg, 3rd of January 2017

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**West Sweden - Key Policy Challenges**

The following is a shortlist of key policy challenges for West Sweden seen in a medium to long term perspective. It has been put down in the form of strengths, weaknesses, opportunities and challenges for the use in the study of West Sweden and Western Scandinavia in the OECD Territorial Review of the region. The background is the existing visions and strategies, an analysis of West Sweden by analysts at Business Region Gothenburg, Region Halland and Region Västra Götaland and discussions and comments in the West Sweden reference group for the Territorial Review on Megaregion Western Scandinavia. The area of analysis covers “all parts” of society including governance questions. Being a part of a larger study on Western Scandinavia focus is more on questions linked to regional than on local development.

The focus of the larger Territorial Review for the West Sweden part are (1) How the different parts can work better together and have better connectivity in different areas giving better job opportunities for all and inclusive growth in the long run. (2) How attractiveness for citizens per see could play an even larger role for development in West Sweden with visions like A Good Life and The Best Place to Live.

**Strengths** – a region of innovation and experiences with high levels of wellbeing and trust

Sweden is a welfare state ranking at the top of evaluations of the UN Sustainable Development Goals, in innovation, among others. West Sweden is a region of innovation and experiences with high levels of subjective well-being, trust and health. It is a dynamic part of Sweden with one fifth of the total population.

West Sweden is an integrated multicore region with large commuter flows between municipalities and with metropolitan Gothenburg at its centre. Gothenburg is surrounded – in a hand fan shape – by the four regional centres Borås, Halmstad, Skövde and Trollhättan. They are all at 30 to 60 minutes train commuting distance from Gothenburg, all have university colleges, advanced health care, science parks, etc. West Sweden benefits from having Norway, the Oslo region and Greater Copenhagen as its closest neighbour. Gothenburg is the centre for trade and international goods by sea for Sweden and Norway via Gothenburg harbour.

A fast growing more resilient economy based on innovation, experiences and active development policy

West Sweden has a knowledge intensive business sector with global companies that are well established in the region, have high levels of R&D and are into cutting edge technology. The companies are important in their own right but also for giving opportunities for students and stimulate the growth of the business service sector. They are also one part of a world quality innovation system based on regional specialization and with close cooperation between different parts of society.

The region is also attractive for tourists. Gothenburg is the core event city of Sweden with activities in all areas ranging from sports, music, theatre, film, literature to scientific fairs. The focus is often on young people and an ambitious regional cultural policy tries to underpin this. The global companies are another factor behind the fast development. West Sweden is also an attractive place to live in with extraordinary environments. The high property values, not only in metropolitan Gothenburg, but along the whole coast of West Sweden, from Halmstad in the south to Strömstad at border to Norway, speak for themselves.

The structural conditions and development described have made West Sweden a more resilient urban economy in the last decade. 90,000 new jobs have been created after the financial crisis (an average growth rate of 1.5 percent per year 2009-2015), giving new job opportunities for people with high academic skills but also for those seeking their first job. The fastest growth has taken place in the business service sector and in hotels and restaurants. The transition is a reality in the labour market with Gothenburg as a centre as well as in the other regional core labour markets.
Decoupling of greenhouse gases and an emerging trend to more sustainable consumption

In the first 15 years of the 21st century a relatively strong growth of the economy and population has been combined with a clear reduction of greenhouse gases in West Sweden. This decoupling has taken place in a region with ambitious local and regional policies to be fossil-independent in the decades to come. Sweden and West Sweden also has one of the highest shares of organic and Fairtrade goods bought in the world. There is a will to move to more sustainable consumption in the public in general and especially among young people.

Close political co-operation at the local and regional level

There is a formalized political cooperation in strategical development questions between regions and municipalities. The model used in Region Västra Götaland is unique in a Swedish context. There are common visions, strategies and plans in areas such as transport planning, culture etc. Halland has fewer municipalities (6) and a successful co-operation model that stresses collaboration also in local matters.

Weaknesses – a more heterogeneous society, mismatch labour market, missing links and houses

In the last decade West Sweden has become a more segregated society with more or less marginalized people in suburbs of Gothenburg and in several of the other regional core cities. People in these areas have fewer resources and few contacts with “main” society. Unemployment and crime rate is high. Income, democratic participation and subjective well-being are low. A high share of the population is born in other countries. Studies show that integration of first generation immigrants, especially in relation to the labour market, is a problem in Sweden, compared to many other countries.

A long term mismatch on the labour market increase inequalities in society and hampers development. Problems to recruit are seen as a major obstacle to expand in many industries as well as to quality in the public sector. The situation is projected to continue. The general level of unemployment is quite high while a large share of the unemployed has competencies that are not sought after on the market. More than half of the unemployed are born in another country, a share that has been growing steadily for at least five years. The unemployment among people with higher education is very low. The Non-Accelerating Inflation Rate of Unemployment (NAIRU) could be as high as seven percent.

There is also a tendency for the general productivity level to be low compared to benchmarking regions in Europe. This could reflect both a situation where not enough students get through “basic” education and a lack of university education. A certain brain drain to Stockholm can be seen as missed opportunities in a region with high potential according to unanimous international benchmarks, made from different aspects. This said there is a need to get a higher share of young people in the region to move on to university studies and to vocational education and training. The fact that West Sweden, the second region of Sweden after Stockholm/Uppsala, only has two “full” universities and four university colleges means that research is too low. The region also has an average number of students compared to its size. 18 percent of the student population studies in a metropolitan region with 20 percent of the population.

Missing rails links hurts the environment, the economy and opportunities for people

The flaws in in basic railway infrastructure are obvious, hinder development and hurt the environment. The most obvious ones are Gothenburg to Borås via Landvetter Airport with connection to metropolitan Jönköping with +150,000 inhabitants, that would get in to commuting distance and the link Gothenburg-Oslo. The latter would have strong effects on travel time, goods transport and greenhouse gas emissions. The relation Oslo-Gothenburg might be the one with the largest difference in travel time by train and car between two metropolitan city regions where a rail connection exists in Europe.

Another long term problem in geographical terms is the fact that there are municipalities in all parts of West Sweden where general development is more problematic. Most of these municipalities are characterized by a small population, low population density and a geographical location away from the
regional labour market centres. Young people, especially women, tend to move out. In the long run this could threaten the service level of these municipalities, getting them into a downward spiral.

Health problems, gender imbalances and a housing market that does not function for all
Even if health in general is good there are problems with unequal health due to differences in resources and different ways of living. A severe problem is the relatively high level of mental health diagnoses, especially among young people. The happiness of young grown-ups is also lower than expected. Problems on the housing market, high demand for education and a labour market with more non-secure jobs could be a part of the explanation. Linked to this, there is ample proof that the housing market does not work well in Sweden at all. We can see it when we compare building activity with our Nordic neighbours and not at least in all committees and reports giving suggestion on solutions. Results are still weak even if a special support scheme has been launched in 2016.

Last but not least there is a long term weakness in the labour market being so clearly divided between the sexes. There is change, but slow. One positive trend is that the jobs that grow fastest do have a more equal gender balance.

Opportunities – Investment in people, infrastructure, connectivity and a sustainable society
The development of River City Gothenburg in the city centre and centre of West Sweden is a key investment for the future aiming to deliver 45,000 new jobs and 25,000 new dwellings in the coming decades. It will strengthen the core as well as the opportunities for development for people and companies in large parts of West Sweden. Investment in the missing rail links will bring better connectivity, better functioning labour markets, more jobs and a better environment for West Sweden, Sweden and Norway.

It is also obvious that West Sweden can and hopefully will have an important role in the transition to more sustainable cities and regions. The region have highly qualified industrial clusters – including companies, universities and research institutes – and a strong political will to be a forerunner in areas linked to critical societal challenges like sustainable transport, sustainable and attractive cities, materials and health.

Increased connectivity in West Sweden and in Western Scandinavia
A continued focus on “the common region”, as expressed in the visions, with increasing connectivity in all sectors of society and in day to day work will bring a more resilient region with more opportunities for people and businesses. There is also ample room for more strategic investment in co-operation in the western part of Sweden, from Västra Götaland to Skåne, a region covering one third of the Swedish population. This should be combined with increased connectivity with the Oslo region and with Greater Copenhagen in both strategic and day to day matters, benchmarking etc.

Civil society and immigrants as a future resource and eventually - happiness
The civil society is an important part of society in West Sweden. Given the right conditions it could be a key to more sustainable development in many areas, including integration. The welfare and happiness of the “New Swedes” is as important as that of the old ones. They are also a resource for the Swedish society as a whole, and needs to be given strong opportunities to develop to their own full potential.

With visions like the best place to live and the good life West Sweden is also well placed to continue a journey that put the subjective well-being of its citizens in centre of its policies. This could mean more focus on participation, culture, experiences and relations, may lead to changes in the educational system etc.

Challenges – Inclusive growth and participation, public finances and the human cloud
The description of strengths, weaknesses and opportunities above gives a general picture of the challenges for West Sweden. In this part we will not repeat all of this but give room to a few important questions.
Inclusive growth and development is a must for the continued success of the “Nordic Welfare Model”, in West Sweden and Sweden. People with resources that are less valued in the fast changing world of today should have strong opportunities to develop and meaningful things to do in their daily life. One solution to this might be a more pronounced responsibility at the local and regional level for questions regarding labour market policies. The implementation of labour market policies is “a regional question” and could be better connected to regional development policy in general.

The high numbers of refugees in 2015 will affect West Sweden for years to come. The focus have changed from being able to mobilize to help the thousands of people that came every week to West Sweden to housing, education and work for the people that will live in our region. The mobilization from the civil society, municipalities, regions etc. was very strong during the most intensive period. Dialogue and information are vital aspects for better results on integration of refugees that has so far been the case. The civil society is a key player.

Another question linked to inclusive growth is to have a better functioning housing market. We need more houses that are affordable for “ordinary people” and people with less resource. We need better functioning systems and markets for the building process and for building. For a large share of people coming from other countries and for many young people this is a question that they live with every day, and have lived with for a long time. There is also a general challenge to increase participation in societal matters. During the last decade there are several examples where things have developed quite poorly in this perspective. This affects trust in society and changes the discussion on societal matters from future to past.

Infrastructure investment and regional development

When it comes to infrastructural investments there seems to be no immediate or even medium term solution to the need of investment in the rail system with links to West Sweden. The situation is hard to accept and other models of financing could be a solution. Openness for new ideas like Hyperloop or self-driving vehicles should also be a part of this discussion.

The economic development in Gothenburg, the metropolitan centre of the region, has been very strong after the financial crisis. Having said this, it’s important to see to it that all regional centres in West Sweden have strong development opportunities. Almost half of the two million inhabitants live outside the Gothenburg region. In 2015 the labour market of Trollhättan statistically became a part of Gothenburg ditto. This is a foreseen and welcomed development that could be contributed to the infrastructural investments between the two cities. It does not mean that the need of a strong development in the regional centres like Borås, Halmstad, Trollhättan and Skövde has diminished. The opposite might well be true.

Public finances at the local and regional level

The long or even medium term projections of the public finances at the local and regional level bring concern for the stability of the Swedish welfare system. The demographic structure with a sharp increase in +80 inhabitants and in young people puts stress to the systems. Productivity development is a problem in many of the services areas paid by public funds which ad to the challenge. In 2016 public finances in West Sweden are in general in balance.

The human cloud

And, last but not least, there is a giant challenge for all cities and regions today to be an active part in the fast transition of society brought on by ICT. The basic conditions for this are strong in West Sweden. The production of self-driving vehicles in the region gives a showcase of this. Still there are many questions on how to handle and be a part of fast developing areas like the GIG-economy creating a Human Cloud changing the conditions for competitiveness in large parts of the service sector, the speed of the investments in 3D technology, the development of a the sharing economy, the bitcoin economy, etc.
## Megaregion Western Scandinavia

### Strengths, weaknesses, opportunities and challenges

The figure below outlines the main strengths, weaknesses, opportunities and challenges for Megaregion Western Scandinavia. The focus is on questions that are common for the area as a whole. The analysis has been taken forward by the steering committee for the territorial review.

At the first page of the respective chapter on different subjects in this report, there is a short summarized analysis of the situation in Western Scandinavia.

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<tr>
<th>Strengths</th>
<th>Opportunities</th>
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<tr>
<td>- Three metropolitan city regions affecting three countries with extensive human and economic exchange and interdependency</td>
<td>- Eight million city – from Oslo to Copenhagen</td>
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<td>- Common history, language, culture and a genuine feeling of belonging together</td>
<td>- Knowledge and competencies that complement and reinforce competitiveness for all parts</td>
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<tr>
<td>- Modern sustainable societies, a high standard of living, trust and few external threats</td>
<td>- Investments in fast rail traffic. Alternative ways of financing? Alternative solutions?</td>
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<tr>
<td>- Attractiveness and quality of living – metropolitan cities, sea and lakes, innovation, experiences</td>
<td>- Public institutions and businesses in closer cooperation and mutual learning</td>
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<tr>
<td>- Knowledge intensive, innovation leaders. R&amp;D in competitive global companies, higher education.</td>
<td>- Common activities in creative industries, experiences and ICT for societal development</td>
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<td>- Large population living relatively dense</td>
<td>- Forerunners and bench mark in creating fossil independent societies and sustainable cities</td>
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<tr>
<td>- Common EU-programs and boarder cooperation</td>
<td>- More resilient regions, jobs and welfare in the regions and in Norway, Sweden Denmark.</td>
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<tr>
<th>Weaknesses</th>
<th>Challenges</th>
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<td>- High share of transport of goods and people on road in an infrastructural system with missing links</td>
<td>- Create financial solutions for more sustainable transport and logistics solutions in</td>
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<td>- General shortage of qualified labor and lack of opportunities for people with lower education</td>
<td>- Solve remaining border barriers – DenSweNor</td>
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<tr>
<td>- Weak exchange between societal institutions</td>
<td>- Inclusive growth with job opportunities for people at all levels of education</td>
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<tr>
<td>- Political cooperation from Oslo to Copenhagen and cooperation between national authorities</td>
<td>- Enhance cooperation at the political and practical level in western Scandinavia</td>
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<td>- No capability to decide on crucial infrastructure investment</td>
<td>- Make politicians and authorities cooperate over country borders. Work against nationalism.</td>
</tr>
<tr>
<td>- Strong regions, sometimes reluctant to cooperate</td>
<td>- Increase connectivity in key areas like higher education, research, experiences, sustainable cities and societies, to develop a more resilient society with maintained global competitiveness</td>
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<td>- A relatively peripheral geographical position in a European context</td>
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Collaboration in Western Scandinavia through the European Funds ERDF and ESF

The EU Interreg Öresund-Kattegat-Skagerrak (ÖKS) program covers Western Scandinavia including the metropolitan regions of Copenhagen-Malmö, Gothenburg and Oslo. It provides support for joint Scandinavian projects for societal development. Areas of support are innovation, low-carbon economy, transport and employment. Several important projects have been funded between partnership organizations resident in Norway, Sweden and Denmark.

One example is the Biogas2020 project which will contribute to create a green economy, bio-based development and sustainable growth across national borders within the area. The project aims to turn competition to cooperation in the biogas industry and to encourage investment in the sector. The initiative to create a biogas platform will result in a large number of partnerships, tools, pilots and tests which will have major impact in the region. The project has a total budget of 12 million euro and consists of 35 Swedish, Norwegian and Danish partners with Innovatum Science Park, Trollhättan, in West Sweden, as project owner.

Other examples are The Blue Move for the Green Economy lead by Hydrogen Sweden, public private partnership promoting hydrogen as an energy carrier with headquarters in Gothenburg, with a total budget of 3 million euro. GameHub Scandinavia gathers strong players in the gaming industry from Denmark, Norway and Sweden aiming to generate new companies through incubation of new businesses, gamification and knowledge sharing with a total budget of 4 million euro and with Gothia Innovation in Skövde, West Sweden, as a central partner. A list of some of the major projects with partners and www linkages is available in Appendix 1.

Interreg Norway-Sweden covers the border area from Västra Götaland up as far as the county of Västernorrland. The part that affects the megaregion is called Borderfree Cooperation and includes municipalities in a 100 km range from the border. One project example is The Green Road, a collaboration between 39 municipalities at the border of West Sweden and Norway to be fossil independent in 2030 with a budget of 1 million euro and with Fyrbodal municipalities as project leader. Innovatum Science Center in Trollhättan leads a project with Inspira Science Center in Östfold and the two university colleges in the area to inspire more young people to study science. The total budget is 4 million euro.

The ERDF and ESF programs for Sweden are implemented in NUTS II regions which mean that they cover West Sweden. Through the joint programs, project actors in Halland and Västra Götaland work together. One example is the project InVäst that train staff, mainly language teachers in West Sweden, to work with refugees. The ERDF program for West Sweden has a 56 million Euro ERDF support for a total budget of 139 million euro 2014-2020.

Supra-national institutions in the Megaregion

The Scandinavian Arena is a political collaboration covering a corridor extending 600 km between the cities of Oslo, Gothenburg, Copenhagen and the Öresund region. The collaboration initiative was taken in 2000 by the Swedish Ministry of Foreign Affairs and a political collaboration committee composed of representatives from Norway, Sweden and Denmark was established. The secretariat is formed of the secretariats for the Gothenburg-Oslo Cooperation and the Greater Copenhagen and Skåne Committee.

The aim is to intensify cooperation between the Gothenburg-Oslo and Öresund regions and to exploit the potential and opportunities

1 http://interreg-oks.eu/scandinaviancrossbordercooperation.4.31c2de0f149b90a660143411.html
for a growing economy, more jobs and a more sustainable development. The strategy is focused on rail infrastructure development and better integrated planning between Denmark, Norway and Sweden. The Scandinavian Arena operated as the political steering group for the Scandinavian 8 Million City project (COINCO II). A project that visualized the possibilities that better connectivity with better rail and high speed rail infrastructure would bring to the region and to the countries involved. The organization has not been very active after the COINCO II project was finished.

The Gothenburg/Oslo cooperation (GO) is a joint organization initiated 1995 and driven by Oslo and Gotheburg cities and the regions of Akershus, Östfold and Västra Götaland. The overall aim is to make the area even more attractive to people and businesses. This requires, inter alia, joint investments in infrastructure and sustainable transport. Focus in 2016/17 is on transport infrastructure and business development. GO is one of the main contributor to the OECD Territorial Review of Western Scandinavia. The reason behind this is the obvious need to get an increased understanding of the opportunities for well-being, sustainable development and growth in Norway and Sweden that better connectivity in the area and between the metropolitan centers will mean.

Svinesundskommittén (The Svinesund Committee) was founded in 1980 to support co-operation across the Swedish-Norwegian border. The emphasis is on Västra Götaland and Östfold but the committee also works to reduce border barriers in general between Norway and Sweden. In the local and regional context the committee focuses on facilitating for commuters across the border and on regional development of SME’s in the border area in the tourism, forestry and marine sectors. Members are Region Östfold, Region Västra Götaland, Fyrbodal municipalities and the border municipalities. The Svinesund is one of the Nordic Council’s 12 regional political co-operation organizations. The Nordic council works on Nordic co-operation in all its aspects with Councils of Ministers in several areas.

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2 http://www.go-regionen.org/en/
3 http://www.svinesundskommitten.com/
4 http://www.norden.org/en/
West Sweden – Regional visions, strategies and general facts

There are two directly elected regional authorities in West Sweden responsible for regional development in the respective region – Region Halland and Region Västra Götaland. Halland has 315,000 inhabitants, Västra Götaland 1,650,000. The total population of almost 2 million means that one out of five Swedes live in the area. The responsibility for regional development is expressed in mandatory regional development programs, taken forward in close cooperation with the municipalities, industry, academia, the civil society, research institutes etc. They should be seen as a joint roadmap for regional development work in Halland and Västra Götaland for actors from all parts of society.

Both regions have visions focused directly on its inhabitants. In Västra Götaland the vision of A Good Life is linked to subjective wellbeing, happiness and sustainable development. In Halland, the vision of the Best Place to Live is about prerequisites for a good life. In practice the difference is not that big with the Regional Development Program for Västra Götaland having “the best possible conditions for people to develop” as its overall objective.

The regional development program/strategy for Västra Götaland for the period 2014-2020 is called VG 2020. It defines objectives and actions inside 32 priorities listed in four program areas: (1) A leading knowledge region, (2) A region for everyone, (3) A region taking global responsibility and (4) A region that is visible and committed. VG2020 is the basis for all regional development work done by the region and the municipalities in Västra Götaland.

Region Västra Götaland, together with the 49 municipalities in Västra Götaland, is formally responsible for the monitoring and evaluation of the strategy via the common political advisory committee on regional development questions. The Committee consists of politicians from the region and from the four associations of municipalities in the region. The associations represent the Gothenburg Region (13 municipalities and approx. 1 million inhabitants), Fyrbodal (13 municipalities, 265,000 inhabitants), Skaraborg (15 municipalities, 265,000 inhabitants), Sjuhärad (8 municipalities, 220,000 inhabitants).

This “Committee on Sustainable Development” (BHU) is directly linked to the Regional Executive Board and the place for discussions on all strategic development questions in Västra Götaland between the local and regional level. Designated areas are transport and infrastructural planning, culture, climate and environment, industry, R&D, labor market and competence development. The committee has been working since the region was formed in 1999 and is in that respect unique in Sweden.

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5 http://www.vgregion.se/upload/Regionkanslierna/regionutveckling/RUSEN/visjon%20eng.pdf
The corresponding program for Halland is called A Strategy for Growth in Halland 2014-2020. The objective is that Halland should be a more attractive, inclusive and competitive region in 2020. The strategy identifies challenges inside 29 priorities in three program areas: (1) High attractiveness, (2) Strong competitiveness and (3) More people in work. The strategy is based on a solid analysis of opportunities and challenges in fourteen areas.7

Halland has a municipal committee where politicians in the region meet politicians from the six municipalities to discuss common local and regional questions. The committee develops recommendations to the Region in areas of strategic regional importance but also initiates questions of common local municipal interest. Initiatives in the committee have led to special models being implemented in home health care etc.

The Megaregion is an important political objective in West Sweden

Both strategies are clear on the importance of and opportunities with more cooperation and better links to the surrounding regions. In VG2020 for Västra Götaland one of the priorities is dedicated to removing barriers and increasing cooperation with Norway and establishing the region Oslo/Gothenburg/Öresund – Megaregion Western Scandinavia. Accessibility, education, R&D, culture, industrial development and healthcare are identified as key areas for cooperation. The need of a more coordinated planning system for rail infrastructure is stressed with the objective to have a decision on investments in a faster and more sustainable accessibility between Norway and Sweden before 2020. The importance of the work done by the Gothenburg/Oslo cooperation, the boarder committee (Svinesund) and inside the EU-programs etc. is highlighted. For Halland one of the priorities is enlarging the local labor markets to the north and south, another about having good access to international markets including establishing the Megaregion Western Scandinavia by faster rail traffic from Oslo to Copenhagen, and on to Hamburg.

Municipalities and Labour Market areas

West Sweden consists of two counties (Västra Götaland and Halland) and 55 municipalities. From north to south, West Sweden is it about 300 km and from west to east about 200 km. The municipalities in West Sweden can also be divided into nine different labour market areas. One municipality, Ämål, belong to a labour market area that predominately consists of municipalities in the county of Värmland (maps on the following page). Gothenburg labour market area includes 1.1 million people, Trollhättan LM has 205,000, Borås 200,000, Skövde 183,000, Halmstad 132,000, Lidköping 73,000 and Bengtsfors 14,000. Strömstad LM close to Halden in Norway has by itself 25,000 inhabitants but could be seen as a part of the Fredrikstad and Halden market with well over 100,000 inhabitants.

The labour market areas are defined by Statistics Sweden (SCB) and the general principle is that a municipality is said to be a part of a larger market if more than a fifth of the people living in a municipality that have a job, travel to work outside the municipality where they live. In 2015 Trollhättan LM statistically became a part of Gothenburg LM in a labour market with 1.3 million inhabitants. Borås LM also have close connections to Gothenburg and the actual LM with Gotenburg as a centre could be said to contain 1.5 million. In Skaraborg the situation is the same for the inhabitants in Skövde and Lidköping LM.

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7 See Challenges for regional development in Halland (Territorial Review Dropbox)
In practice they constitute a LM with 260,000 inhabitants. One of the five or six most populated in the country. In the official statistics SCB changes the labour market areas every fifth year. Next time this will happen is 2019 on the figures for 2018. In the part on Urban development, land use and planning 3D-maps show the structure of how people live more in detail.

COUNTRIES, MUNICIPALITIES AND LOCAL LABOUR MARKET AREAS IN WEST SWEDEN

Västra Götaland
1 Härryda 66 Herrljunga
2 Partille 70 Vara
7 Ockerö 71 Göteborg
15 Stenungsund 72 Tibro
19 Tjörn 73 Töreboda
21 Orust 80 Göteborg
27 Sotenäs 81 Mölndal
30 Munkedal 82 Kungälvs
35 Tanum 83 Lysekil
38 Dals-Ed 85 Uddevalla
39 Färgelanda 86 Strömstad
40 Ale 87 Vänersborg
41 Lerum 88 Trollhättan
42 Vårgårda 89 Alingsås
43 Bollebygd 90 Borås
44 Grästorp 91 Ulricehamn
45 Essunga 92 Ängelholm
46 Karlsborg 93 Mariestad
47 Gullspång 94 Lidköping
52 Tranemo 95 Skara
56 Bengtsfors 96 Skövde
61 Mölndal 97 Hjo
62 Lilla Edet 98 Tidaholm
63 Mark 99 Falköping
65 Svenljunga

Halland
15 Hylte
60 Halmstad
61 Laholm
62 Falkenberg
63 Varberg
64 Kungsbacka

LABOUR MARKET AREAS (SCB LA2013)
Life satisfaction, trust and health

Megaregion Western Scandinavia

The Nordic Countries in general have citizens with high life-satisfaction, good health and high levels of trust. Western Scandinavia is no exception. But there are parts of the population with less well-being, worse health and lower trust. For health there is a correlation between inferior health and educational level. For well-being questions of unemployment and relations are vital.

The general development is positive but differences between people with different living conditions tend to increase. A more integrated Western Scandinavia will be more resilient and increase the opportunities also for people with fewer resources.
High life-satisfaction and trust – but there are exceptions

The general level of wellbeing among the inhabitants in West Sweden is high. More than 9 out of 10 are quite satisfied or very satisfied with their lives. The figures are stable and slowly rising from the beginning of the century. A period characterized by better health, steady and high levels of trust and relationship with family and friends, a fast rise in disposable income, high basic belief in the democratic and welfare system and in its ability to provide services, and relatively high levels of activity, for the majority of the population. Most main factors influencing happiness in West Sweden thereby developed in the right direction.

HAPPINESS AND TRUST IN WEST SWEDEN 1998-2014

For people living in the areas with the least resources the situation is not that good. Two out of ten are not satisfied with their lives. In general, being out of work and living alone affects people happiness, in a negative way. There are also other causes for concern. The young generation have a less positive view of life than those who are middle-aged. This is not a result in line with main happiness research and some of it could be contributed to a housing market with high entrance barriers and a relatively high level of mental health problems especially among young women.

INTEREST IN POLITICS AND SATISFACTION WITH DEMOCRACY IN WEST SWEDEN 1998-2011

For people living in the areas with the least resources the situation is not that good. Two out of ten are not satisfied with their lives. In general, being out of work and living alone affects people happiness, in a negative way. There are also other causes for concern. The young generation have a less positive view of life than those who are middle-aged. This is not a result in line with main happiness research and some of it could be contributed to a housing market with high entrance barriers and a relatively high level of mental health problems especially among young women.

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8 Source: SOM Institute (Gothenburg University) Source: SOM Institute (Gothenburg University), The SOM-institute has been making a yearly survey to 6,000 inhabitants in Västra Götaland and Kungsbacka (Halland) in cooperation with Region Västra Götaland since 1998. In general the result for Västra Götaland is in line with those for the survey that the institute does for Sweden, also on a yearly basis. The general picture is that the inclusion of all parts of Halland would make the figures somewhat stronger. One reason is the structure of the population. Another is that the inhabitants in Halland have good health.
There is high and increasing interest in politics at different levels of society over time. A vast majority is also satisfied with how democracy works. The figures for 2015 show a slight and general downturn on satisfaction with democracy. A feasible explanation is the great stress the Swedish society in general was put under by the large flows of refugees.

In day to day life a vast majority of the inhabitants in West Sweden feel that they are treated with respect, learn or do interesting things, are proud of what they have done and many are also able to choose how they spend their own time. The correlation between these factors and happiness levels in West Sweden are strong.9

Source: SOM Institute (Gothenburg University)

**Strong but unequal health**

Life expectancy for the population of West Sweden is rising. Average life expectancy has increased continuously for both men and women in all age groups. The average life expectancy for a new-born boy in West Sweden is now slightly over 80 years and for a new-born girl it is about 84 years. For a 65-year-old man, the estimated average remaining life expectancy is about 19 years and for a 65-year-old woman the figure is slightly over 21 years. People in West Sweden are not only living longer, there also appears to have been a gradual improvement in their health during the past decade. The proportion of people who consider their health to be good or very good (73%) is on the increase whilst the proportion of people who feel that their health is poor or very poor (6%) is falling. Poor mental well-being is a widespread public health problem affecting about 15 percent of the population of West Sweden. It is influenced by a whole host of factors, including social network, financial circumstances and the ability of the individual to maintain good lifestyle habits and cope with stress or vulnerability.

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9 Region Västra Götaland (2017); Happiness in Västra Götaland – Could a society with more focus on happiness increase the well-being of its inhabitants? Published in spring 2017
Oral health is vitally important to quality of life and well-being. The number of children and young people who have never had caries has risen during the past 10 years and a growing number of adults in West Sweden (75%) feel that they have good oral health.

The biggest challenge in the health situation in West Sweden consists of the differences in health between population groups. Mortality before the age of 75 is almost twice as high for people with low compared to high education. There is a difference of seven to eight years in expected life span between men with high and low education.

Self-assessed health status in Western Scandinavia
The health status in Western Scandinavia is overall good. Most parts of the megaregion have a population that sees their health as good both in a national and Baltic perspective. The exception, with slightly lower values is Östfold on the border of Norway and Sweden.

SELF-ASSESSED HEALTH, BALTICS SEA REGION, 2014

Demographic structure, trends and population flows

Megaregion Western Scandinavia benefits from high natural population growth, strongly positive in-migration from other parts of Norway and Sweden, as well as net immigration from other countries. The demographic vulnerability in terms of natural population growth remains the strongest in the areas outside of the major urban areas (Oslo, Gothenburg, Malmö). The demographic structure remains overall beneficial. Although on the increase, compared to other parts of Scandinavia the welfare burden (the proportion of the economically active age cohort relative to the total population) in the Megaregion remains low. All parts of the Megaregion have experienced net population gains during the last decade, with the highest relative population growth being in the northern part of the Megaregion.
In 2015, West Sweden had a population of almost 2 million people, which represents 20 percent of the population of Sweden. More than one quarter of the population lives in the largest municipality, Gothenburg. The smallest municipality, Dals-Ed, have a population of less than 5 000 people. Since 2014, the number of men has been higher than the number of women and there are now about 2 000 more men in West Sweden than women.

**Population density**

West Sweden have a population density of 67 people per km² which is almost three times higher than the average population density in Sweden. However, compared to the counties of Stockholm and Skåne (340 resp. 120 people per km²), West Sweden have considerably lower population density.

West Sweden are most densely populated in Gothenburg and the surrounding areas and also along the coast line, especially south of Gothenburg. The most sparsely populated areas are located in the north and east of West Sweden, e.g. in Dals-Ed there are less than 7 people per km².

**Population growth**

From a population growth in West Sweden of about 0,5 percent per year (8-9 000 individuals) in the years 2001-2005, the population growth has more than doubled and is now more than 1 percent per year (21 000 individuals). This is consistent with the average development in Sweden during this time period. West Sweden’s share of the national population remains around 20 percent.

**ANNUAL POPULATION GROWTH IN SWEDEN, 2001-2015**

Source: SCB
The population growth rate varies considerably between the municipalities in West Sweden. The municipalities in the Gothenburg area have the highest growth rate, while many municipalities in the north and east of West Sweden have a decrease in population since 2001. The last couple of years though, almost all municipalities have an increase in population.

The main cause of the population growth for the period is the foreign migration surplus. This has increased through the years, from about 5 000 individuals to 15 000 during 2001-2015. In these years the natural population growth has also increased, from less than 1 000 per year 2001-2005 to almost 5 000 during the last five years. The domestic migration surplus however, has decreased from approximately 3 000 individuals to 1 000 from 2001 to 2015.

CONTRIBUTING PARTS OF THE POPULATION GROWTH, WEST SWEDEN

The high immigration rate has made the share of the foreign born population in West Sweden increase from 12 percent in 2001 to 16 percent in 2015. There are large differences between the municipalities in share of foreign born population, ranging from 5 percent (Öckerö) to 25 percent (Gothenburg and Strömstad).

Every years there are approximately 1 500 – 2 000 people migrating in each direction between Norway and West Sweden. The net migration varies over the years. In 2015 around 200 people more migrated from Norway to West Sweden than in the opposite direction, while in 2014 the net migration were positive to Norway instead.

Most municipalities along the coast and surrounding Gothenburg (but not Gothenburg) have a positive net domestic migration. The municipalities with a negative net domestic migration are, except for Gothenburg, Trollhättan and Skara, some of the most sparsely populated municipalities and often situated quite far away from regional labour market centres.

In total, West Sweden has a positive domestic migration, although it has been negative most years to both Stockholm and Skåne.

NET DOMESTIC MIGRATION WEST SWEDEN

Source: SCB
Population projection

The population in West Sweden is projected to continue to grow with slightly more than one percent per year for the years 2016-2025. All age groups are projected to increase, but the growth is assumed to be relatively highest in the oldest age group (80+) which will increase with more than 30 percent. Also the number of children is projected to increase more than the other age groups. This means that the dependency ratio\(^{10}\) is projected to increase from 74 (2015) to 79 (2025).

All municipalities in West Sweden are projected to increase their population from 2015 to 2025, mainly due to the high immigration rate. But just as the historic population growth is not evenly distributed, the projected growth rate also differs, ranging from +1 percent in Gullspång to +18 percent in Strömstad.

\[^{10}\text{Dependency ratio defined as } \frac{\text{number of individuals aged 0–19 years} + \text{number of individuals 65 years or older}}{\text{number of individuals aged 20–64 years}} \text{.}\]
Many municipalities already have dependency ratios close to 100, and in 2025 ten municipalities, e.g. Gullspång, Sotenäs and Orust, are projected to have dependency ratios over 100. Gothenburg has the lowest dependency ratio now, 58, and is projected to still have the lowest ratio in 2025, 62.

Source: Västra Götalandsregionen and Region Halland
Structure of the economy

Megaregion Western Scandinavia

Megaregion Western Scandinavia is in a fast transition to a more urban and resilient economy. The development after the financial crisis has brought strong economic growth and new job creation well over one percent per year in the region. One explanation behind this is the frequent and in many cases increased exchange inside the region in all areas of the economy. Cross ownership and investments has increased between the countries.

Trade relations are the most or among the most important. The labor markets are intertwined by strong commuter flow at the borders and Nordic labor market integration means that people in the different countries take advantage of differences in economic cycles. An example is that three percent of all employed in Norway where Swedes around 2010. There is extensive economic exchange in the markets for tourism, commercial trade and properties, creating opportunities for people and companies on all sides of the borders and in the region as a whole.
This introductory section on the West Swedish economy presents an outline on how the economy is composed by counties and labor markets. In addition, the analysis reviews some of the main indicators such as Gross Regional Product (GRP), total wage sum produced, number of establishments and number of employed in the region’s various labor markets.

**Labor markets**

Many productive firm activities in the region generate value for the residents in West Sweden. Beyond and above input costs, the GRP has developed well within the two counties of West Sweden. Halland County, for example, has experienced a real GRP increase of approximately 46 percent in the period 2000-2014. The corresponding increase in Västra Götaland County is about 36 percent. Combined the two counties of West Sweden have generated a 37 percent increase in real GRP. In absolute terms, the increase corresponds to nearly SEK 204 billion. About 15 percent of the increase is generated in Halland and the remaining 85 percent in Västra Götaland. A breakdown of the real GRP growth into labor markets (LM) in West Sweden shows that LM Gothenburg has nearly 80 percent of West Sweden’s real GRP growth, followed by LM Trollhättan-Vännersborg which generates 8 percent of the real GRP growth in West Sweden.

In analyzing local labor markets in West Sweden it shows that Västra Götaland has several different sub-regions that form labor markets based on high commuting flows. In total there are eight labor markets in West Sweden, where seven are majority-tied to Västra Götaland and one is majority-tied to Halland. The figure below shows that LM Gothenburg has more than one third of the total establishments in West Sweden, whereas LM Strömstad and LM Bengtsfors-Dals-Ed are the smallest labor markets with only one percent of the total share of West Sweden’s establishments. Nearly 132,000 establishments are present within the local labor market of Gothenburg. Also the labor markets of Borås, Trollhättan-Vännersborg and Skövde have more than 20,000 establishments and each labor market make up 6-7 percent of the total establishments in West Sweden.

**LABOR MARKETS’ (LM) SHARE OF TOTAL ESTABLISHMENTS AND NUMBER OF ESTABLISHMENTS IN WEST SWEDEN 2015**

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Västra Götaland County</td>
<td>132,027</td>
<td>25,279</td>
<td>22,867</td>
<td>21,841</td>
<td>10,905</td>
<td>4,729</td>
<td>2,877</td>
<td>197,556</td>
</tr>
<tr>
<td>Halland</td>
<td>16,166</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>40,907</td>
</tr>
<tr>
<td>West Sweden</td>
<td>236,691</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>238,463</td>
</tr>
</tbody>
</table>

Source: Statistics Sweden

About 950,000 individuals work and live as well as commute to the labor markets in West Sweden (see table). A vast majority of these work live and commute in and/or to Västra Götaland. West Swedish employment is concentrated to the labor market of Gothenburg and the labor markets of Trollhättan-Vännersborg, Borås and Skövde. LM Gothenburg, LM Strömstad and LM Halmstad are the labor markets in West Sweden which have experienced the highest job growth since 2000.
EMPLOYED INDIVIDUALS WHO WORK, LIVE AND COMMUTE TO THE LABOR MARKET (LM), COUNTY OR REGION, 2000 AND 2015

<table>
<thead>
<tr>
<th>Labor Market / County</th>
<th>Employment (work and live in + commute to)</th>
<th>Change 2000-2015</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2000</td>
<td>2015</td>
</tr>
<tr>
<td>LM Gothenburg</td>
<td>449,076</td>
<td>565,577</td>
</tr>
<tr>
<td>LM Borås</td>
<td>81,698</td>
<td>91,978</td>
</tr>
<tr>
<td>LM Trollhättan-Vänersborg</td>
<td>87,150</td>
<td>88,033</td>
</tr>
<tr>
<td>LM Skövde</td>
<td>78,895</td>
<td>84,930</td>
</tr>
<tr>
<td>LM Halmstad</td>
<td>51,417</td>
<td>60,694</td>
</tr>
<tr>
<td>LM Lidköping-Götene</td>
<td>31,302</td>
<td>34,004</td>
</tr>
<tr>
<td>LM Strömstad</td>
<td>9,726</td>
<td>12,117</td>
</tr>
<tr>
<td>LM Bengtsfors-Dals-Ed</td>
<td>6,564</td>
<td>6,368</td>
</tr>
<tr>
<td>Halland</td>
<td>108,543</td>
<td>136,640</td>
</tr>
<tr>
<td>Västra Götaland</td>
<td>692,176</td>
<td>811,913</td>
</tr>
<tr>
<td>West Sweden</td>
<td>800,719</td>
<td>948,553</td>
</tr>
</tbody>
</table>

Source: Statistics Sweden

Looking at the development of job and employment growth in a local/municipal perspective in the period 2005-2015 there is an increase off more than 100,000 new net jobs. This means a growth rate of 1.2 percent per year, regardless of the effects of the financial crisis where more than 30,000 jobs were lost 2008-2009. Most new jobs has been created in the metropolitan center of the region, in three of the corridors connecting the metropolitan center of Gothenburg to the regional centers, in Skövde (the regional center of Skaraborg) and in Strömstad, at the Norwegian border.

The fastest job growth is linked to metropolitan development in and around Gothenburg with effects all the way from Stenungsund in the north to Varberg in the south. The strong development in the eastern corridor from Gothenburg via Borås and on to Ulricehamn and Jönköping can be seen as a result of investments in road infrastructure and in the position close to Landvetter airport. Good communications is also one part of the explanation of the development in the corridor from Gothenburg via Lerum and Alingsås to Vårgårda (east-north-east). Municipalities with weaker job growth are those with a high level of traditional manufacturing jobs and those that are situated farther away from regional centers. There is also an obvious effect of the closing down of the SAAB factory in and around Trollhättan.

The general pattern is the same when we look at the growth of employed persons that live in the respective municipality, but the differences between municipalities close to each other are less pronounced. A fast growth in commuting makes up for the difference. The very strong growth in Gothenburg city stands out (20 percent more employed people 2015 than 2005) and the expansive corridors can still be seen. All cities within 45 minutes commuting distance from Gothenburg have strong employment development. The regional centers of Halmstad and Borås also show good figures with 13 percent more employed people in 2015 than in 2005. In most part of the sparsely populated district of Dalsland, between Lake Vänern and Norway, there were fewer people employed in 2015 than in 2005.

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11 Some municipalities in Västra Götaland and Halland form labor market regions across counties. Thus, the sum of employed in the various LM does not necessarily correspond to the sum of employment in the county (e.g. the Halland municipalities Varberg, Falkenberg and Kungsbacka belong to LM Gothenburg).
Source: SCB

Note: In the municipalities with the two lightest colors there are fewer jobs in 2015 than in 2005 and/or fewer persons living that has a job (employment growth) 2015 than 2005.

The total wage sum created in West Sweden in 2015 was SEK 308 billion, of which SEK 49 billion in was paid out in Halland and SEK 259 billion in Västra Götaland. Figure 2 shows the annual real growth of the total wage sum for individuals who work, live in and commute from the two counties and West Sweden from 2011 and onwards. The real growth rate of the wage sum during latest year has been well above the median for the five-year period. The positive development of the real growth in wage sum in 2014-2015 is an effect of the fact that both counties of West Sweden have experienced an economic boom in production of both goods and services.

REAL ANNUAL GROWTH IN TOTAL WAGE SUM OF INDIVIDUALS WHO WORK, LIVE AND COMMUTE FROM THE COUNTY OR REGION, 2011-2015

Source: Statistics Sweden
A breakdown of the real growth in wage sum into labor markets shows that LM Gothenburg has the highest growth of nearly 5 percent in 2015. Also the labor markets of Trollhättan-Vänersborg (4.6%) and Halmstad (4.5%) show high growth in total wage sum 2015. Another observation is that LM Gothenburg, LM Trollhättan-Vänersborg and LM Borås generate more than 80 percent of the real wage in West Sweden.

**A breakdown of economic sectors in West Sweden**

The table below provides a breakdown of value added and employment in 2014 for West Sweden. Approximately 2 percent of the value added and 1 percent of the employment is generated in the primary sector. The secondary sector generates almost one third of the value added and about one fifth of the employment in the region. West Sweden’s tertiary sector is the largest sector. 61 percent of the region’s value added and 78 percent of the employment belong in the tertiary sector.

In total, West Swedish firms generated approximately SEK 733 billion in value added and about 851,000 were employed in the region. The main sectors generating value added are less knowledge-intensive market services (34% of total) and knowledge-intensive market services (12% of total), whereas main sectors in terms of employment are knowledge-intensive services (36% of total) and less knowledge-intensive market services (25% of total).

### BREAKDOWN OF VALUE ADDED AND EMPLOYMENT BY ECONOMIC SECTOR IN WEST SWEDEN, 2014

<table>
<thead>
<tr>
<th>Sector</th>
<th>Value added</th>
<th>Share of total</th>
<th>Employed</th>
<th>Share of total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>in SEK billion</td>
<td>Share of total</td>
<td>in number</td>
<td>Share of total</td>
</tr>
<tr>
<td>Primary (SNI 01-09)</td>
<td>14</td>
<td>2%</td>
<td>6,953</td>
<td>1%</td>
</tr>
<tr>
<td>Secondary (SNI 10-43)</td>
<td>197</td>
<td>27%</td>
<td>181,435</td>
<td>21%</td>
</tr>
<tr>
<td>Total tertiary (SNI 45-99)</td>
<td>448</td>
<td>61%</td>
<td>662,326</td>
<td>78%</td>
</tr>
<tr>
<td>Total unknown (SNI 00)</td>
<td>75</td>
<td>10%</td>
<td>188</td>
<td>0%</td>
</tr>
<tr>
<td>Total all sectors (SNI 00-99)</td>
<td>733</td>
<td>100%</td>
<td>850,902</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Statistics Sweden

**Sub-sector dynamics in West Sweden**

There is a clear and ongoing shift away from low and medium-low technology manufacturing towards more complex production processes in West Sweden. Today’s manufactured products in the region have a much higher technology content compared to only few years back. Moreover, the employment in traditionally heavy industries has transitioned into a growing supply of workers delivering high-end business services.

The fastest growth in value added in the period 2008-2014 has occurred in less knowledge-intensive services and other knowledge-intensive services. The sub-sector with fastest decline in value added is mining and quarrying. In terms of absolute values, the largest increase occurs within market services and the three sub-sectors low/medium-low/medium-high technology manufacturing have the largest decline.

In terms of employment in West Sweden the fastest growth in the period 2008-2014 is observed in knowledge-intensive market services and in energy and environmental companies. The fastest declining sectors are medium-high technology and mining and quarrying. In absolute values the largest increase is within knowledge-intensive services and in less knowledge-intensive services. The sub-sector with the largest fall is medium-high technology manufacturing and low technology manufacturing.
**Private and public sector and size of firms**

The value added and employment in companies according to their size and sector (i.e. private and public) are presented in the following tables.

In West Sweden most of the value added is generated by firms with 10-49 employees and firms with more than 200 employees. Moreover, the majority of the value added is typically generated in private firms. For example, the share of private firms is above 90 percent of the total value added within the firm size categories 0 employees (i.e. self-employed), 1-9 employees and 10-49 employees.

**VALUE ADDED IN SEK BILLION BY PRIVATE AND PUBLIC COMPANIES ACCORDING TO FIRM SIZE IN 2014**

<table>
<thead>
<tr>
<th>Sector</th>
<th>Value added by firm size based on number of employees</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Private sector</td>
<td>51</td>
</tr>
<tr>
<td>Public sector</td>
<td>2</td>
</tr>
<tr>
<td>Unknown</td>
<td>1</td>
</tr>
<tr>
<td>Total category</td>
<td>53</td>
</tr>
<tr>
<td>Category’s share of total</td>
<td>7%</td>
</tr>
</tbody>
</table>

Source: Statistics Sweden

Approximately two thirds of the employees in West Sweden work within the private sector. Firms with 10-49 employees have the largest share of the region’s total employees. The distribution of employees between private and public sector is more equal between sectors in firms with 200 and more employees, where private firms have 52 percent of the category’s total employees and public firms have the remaining 48 percent.

**EMPLOYMENT BY PRIVATE AND PUBLIC COMPANIES ACCORDING TO FIRM SIZE IN 2014**

<table>
<thead>
<tr>
<th>Region</th>
<th>Sector</th>
<th>Employment by firm size based on number of employees</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>West Sweden</td>
<td>Private sector</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Public sector</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Unknown</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Total category</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Category’s share of total</td>
<td>0%</td>
</tr>
</tbody>
</table>

Source: Statistics Sweden
The table below gives a tentative overview of the top 15 largest employers in the private sector in 2015 for West Sweden. The largest employer in the private sector in West Sweden is without doubt Volvo Cars with 15,575 employees, followed by Volvo Trucks and Volvo Powertrain with 3,975 and 3,475 employees, respectively. In general, the West Swedish economy has strong private employers within high-end automotive production, as well as within high-end ICT services.

### The 15 Largest Employers in the Private Sector in West Sweden, 2015

<table>
<thead>
<tr>
<th>Rank</th>
<th>Firm</th>
<th>Industry</th>
<th>Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Volvo Cars</td>
<td>Automotive</td>
<td>15,575</td>
</tr>
<tr>
<td>2</td>
<td>Volvo Trucks</td>
<td>Automotive</td>
<td>3,975</td>
</tr>
<tr>
<td>3</td>
<td>Volvo Powertrain</td>
<td>Automotive</td>
<td>3,475</td>
</tr>
<tr>
<td>4</td>
<td>Ericsson</td>
<td>R&amp;D on natural sciences and engineering</td>
<td>3,175</td>
</tr>
<tr>
<td>5</td>
<td>Volvo Information Technology</td>
<td>ICT consulting</td>
<td>2,725</td>
</tr>
<tr>
<td>6</td>
<td>AstraZeneca</td>
<td>R&amp;D on natural sciences and engineering</td>
<td>2,175</td>
</tr>
<tr>
<td>7</td>
<td>GKN Aerospace Sweden</td>
<td>Aeronautics/automotive</td>
<td>2,025</td>
</tr>
<tr>
<td>8</td>
<td>SKF Sweden</td>
<td>Manufacturing of machinery and equipment</td>
<td>2,025</td>
</tr>
<tr>
<td>9</td>
<td>Frösunda Omsorg</td>
<td>Health care and care</td>
<td>1,825</td>
</tr>
<tr>
<td>10</td>
<td>Västsvensk Tidningsdistribution</td>
<td>Media services</td>
<td>1,575</td>
</tr>
<tr>
<td>11</td>
<td>SCA Hygiene Products</td>
<td>Manufacture of sanitary goods</td>
<td>1,425</td>
</tr>
<tr>
<td>12</td>
<td>Gekås Ullared</td>
<td>Retail</td>
<td>1,375</td>
</tr>
<tr>
<td>13</td>
<td>Securitas Sweden</td>
<td>Security services</td>
<td>1,375</td>
</tr>
<tr>
<td>14</td>
<td>Willys</td>
<td>Retail</td>
<td>1,375</td>
</tr>
<tr>
<td>15</td>
<td>Coop Butiker &amp; Stormarknader</td>
<td>Retail</td>
<td>1,325</td>
</tr>
</tbody>
</table>

Source: Statistics Sweden

**Economic links between West Sweden and the Oslo region**

Cross-border exchange is very frequent at and close to the boarder to Norway. The tourism sector in West Sweden is dependent on Norwegian tourists and the establishment of large malls close to the border is an effect of large differences in purchasing power and prices between Norway and Sweden. Nordby shopping center in Strömstad is located only two minutes from the Norwegian border, 20 kilometers from Strömstad city center. Nordby has 80,000 m² of shopping in 110 stores and is one of Sweden largest malls when it comes to turnover figures. Another example is Tanum Shopping Center, located midway in between Gothenburg and Oslo. The turnover in the retail sector in Strömstad was approximately SEK 8 billion in 2015 (+4 percent compared to 2014), whereas the retail turnover in Tanum was SEK 1.6 billion (+47 percent compared to 2014).

The Gothenburg region is a strong attractor of Norwegian investments which is seen in that Norway tops the list of foreign-ownership in the region. In 2015, there were 563 Norwegian establishments (20 percent of all foreign-owned establishments) employing about 8,600 persons (10 percent of all employees in foreign-owned establishments) in the Gothenburg region. Out of the 563 Norwegian establishments, two thirds fall within commerce, property and business services. Establishment with Danish ownership is also well-represented in the Gothenburg region. In 2015, 284 Danish establishments (10 percent of all foreign-owned establishments) employed nearly 6,700 persons (8 percent of all employees in foreign-owned establishments), mostly within construction.

Other important economic links between West Sweden and the Scandinavian countries are direct flight connections, for example between Landvetter Airport and Oslo Airport, and between Landvetter Airport and airports in Copenhagen and Tirstrup (i.e. Arhus). Moreover, the destinations and origins of the traded
goods of West Swedish firms (which is outlined in the following section) also show signs of strong economic links and co-operation with both Scandinavian countries.

**International trade to and from West Sweden**

The tables show the value of goods exports and goods imports in SEK billion, the share of trade with the Scandinavian countries and share of GRP traded in 2015. West Sweden is known for its strong position in international trade and has over a long period of time been a net exporter. More than a third of Sweden’s internationally traded goods go via the Port of Gothenburg.

West Sweden has goods exports of SEK 244 billion, which correspond to almost a third of the region’s real GRP. Most of the value (approximately SEK 180 billion) is generated by exporting firms in the Gothenburg region. The top 3 most important destinations for West Sweden are Norway, Belgium and USA, where Belgium’s high ranking is largely attributable to Volvo Car’s production in Ghent. About 18 percent of the total goods exports value has Scandinavia (i.e. Norway and Denmark) as destination. The three biggest export sectors in terms of value of goods are automotive, other machines and manufactured goods and computers, electronics and optical products.

The total goods imports of West Sweden make up less than a third of the GRP, or approximately SEK 210 billion. Top 3 most important origins for West Sweden in 2015 are Germany, Netherlands and Belgium. About 14 percent of the goods imports have Scandinavia as origin. The three biggest import sectors in terms of value of goods are computers, electronics and optical products, automotive and other machines and manufactured goods.

**GOODS EXPORTS (SEK BILLION), SHARE OF GOODS EXPORTS TO SCANDINAVIAN COUNTRIES AND SHARE OF GOODS EXPORTS OF GRP, 2015**

<table>
<thead>
<tr>
<th>Rank</th>
<th>Country</th>
<th>Goods exports SEK billion</th>
<th>Share of goods exports</th>
<th>Share of real GRP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Norway</td>
<td>26.9</td>
<td>11.0%</td>
<td>3.6%</td>
</tr>
<tr>
<td>2</td>
<td>Belgium</td>
<td>26.0</td>
<td>10.7%</td>
<td>3.4%</td>
</tr>
<tr>
<td>3</td>
<td>USA</td>
<td>25.4</td>
<td>10.4%</td>
<td>3.4%</td>
</tr>
<tr>
<td>4</td>
<td>Germany</td>
<td>17.8</td>
<td>7.3%</td>
<td>2.4%</td>
</tr>
<tr>
<td>5</td>
<td>United Kingdom</td>
<td>16.2</td>
<td>6.6%</td>
<td>2.1%</td>
</tr>
<tr>
<td>6</td>
<td>Denmark</td>
<td>15.8</td>
<td>6.5%</td>
<td>2.1%</td>
</tr>
<tr>
<td>7</td>
<td>Finland</td>
<td>13.6</td>
<td>5.6%</td>
<td>1.8%</td>
</tr>
<tr>
<td>8</td>
<td>China</td>
<td>11.8</td>
<td>4.8%</td>
<td>1.6%</td>
</tr>
<tr>
<td>9</td>
<td>France</td>
<td>10.8</td>
<td>4.4%</td>
<td>1.4%</td>
</tr>
<tr>
<td>10</td>
<td>Netherlands</td>
<td>10.8</td>
<td>4.4%</td>
<td>1.4%</td>
</tr>
<tr>
<td></td>
<td>Total goods exports</td>
<td>243.6</td>
<td>100.0%</td>
<td>32.3%</td>
</tr>
<tr>
<td></td>
<td>Scandinavia</td>
<td>42.8</td>
<td>17.5%</td>
<td>5.7%</td>
</tr>
<tr>
<td></td>
<td>Real GRP</td>
<td>754.1</td>
<td></td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Source: Statistics Sweden
GOODS IMPORTS (SEK BILLION), SHARE OF GOODS IMPORTS TO SCANDINAVIAN COUNTRIES AND SHARE OF GOODS IMPORTS OF GRP, 2015

<table>
<thead>
<tr>
<th>Rank</th>
<th>Country</th>
<th>Goods imports SEK billion</th>
<th>Share of goods imports</th>
<th>Share of real GRP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Germany</td>
<td>39.1</td>
<td>18.6%</td>
<td>5.2%</td>
</tr>
<tr>
<td>2</td>
<td>Netherlands</td>
<td>19.3</td>
<td>9.2%</td>
<td>2.6%</td>
</tr>
<tr>
<td>3</td>
<td>Belgium</td>
<td>15.0</td>
<td>7.1%</td>
<td>2.0%</td>
</tr>
<tr>
<td>4</td>
<td>Norway</td>
<td>14.8</td>
<td>7.1%</td>
<td>2.0%</td>
</tr>
<tr>
<td>5</td>
<td>United Kingdom</td>
<td>14.4</td>
<td>6.8%</td>
<td>1.9%</td>
</tr>
<tr>
<td>6</td>
<td>China</td>
<td>13.8</td>
<td>6.6%</td>
<td>1.8%</td>
</tr>
<tr>
<td>7</td>
<td>Denmark</td>
<td>13.7</td>
<td>6.5%</td>
<td>1.8%</td>
</tr>
<tr>
<td>8</td>
<td>France</td>
<td>8.1</td>
<td>3.8%</td>
<td>1.1%</td>
</tr>
<tr>
<td>9</td>
<td>Poland</td>
<td>6.9</td>
<td>3.3%</td>
<td>0.9%</td>
</tr>
<tr>
<td>10</td>
<td>USA</td>
<td>5.7</td>
<td>2.7%</td>
<td>0.8%</td>
</tr>
</tbody>
</table>

Total goods exports: 210.2 billion, 100.0% of real GRP: 27.9%
Scandinavia: 28.5 billion, 13.6% of real GRP: 3.8%
Real GRP: 754.1 billion, 100.0%

Source: Statistics Sweden

The urban economy

One important long term trend seen in the whole Megaregion is the strong development of sectors that are dependent on and thereby concentrated to urban environments. In a globalized world, with rapid knowledge development, traditional production tends to be concentrated to areas with low cost labour. The urban environment is then a prerequisite to have enough knowledge concentrated in one place. Business services, finance etc., are typical urban activities. The effect in the metropolitan areas will be a specialized population and a more diversified economy. The urban environment is also the environment for the whole experience industry including restaurants and hotels. The Osloregion and Öresund (that include the capital cities Oslo and Copenhagen) are more urban than West Sweden that still has more of innovative and traditional industrial production.

Due to lack of data the West Swedish goods imports exclude the goods imports of Halland County.

R&D, Innovation and Entrepreneurship

Megaregion Western Scandinavia

Western Scandinavia is strong on innovation. R&D levels are high and the EU Regional Innovation Scoreboard ranks the different parts of the region as innovation leaders or strong innovators in a European perspective. The regional specializations differ and better connectivity would give room for more co-operation and competitiveness, in the regions as well as in the countries affected. The transition to a more urban economy is seen by fast growth in areas dependent on dense economic environment as business services, hotels and restaurants, etc. There is also fast growth in medium to high-technology sectors. An urban economy based on qualified services, high-tech and “city life” is less dependent on the outside world, more competitive and all in all, more resilient. Megaregion Western Scandinavia, in conclusion, is a leading innovation region in a European (EU28) perspective, both in terms of enabling factors (tertiary education attainment, public and private R&D expenditures), firm activities and innovation outputs.
West Sweden is characterized by high levels of R&D in an international perspective. The innovation sector is dominated by a number of (by Swedish standards), unusually large companies in various industries like Ericsson, Volvo, SKF and AstraZeneca. These companies are very R & D intensive and are all located in the Gothenburg area. Higher education is the second largest contributor to R&D spending. To some extent the R&D in this sector is also local to its nature. For example, the technical university in the region, Chalmers, is a university with strong connection to the local surrounding business community. The connections between the "chemistry center" at Chalmers and the chemical industry and refineries are intense. There are also long term links between the institution for control engineering and automation and companies such as Volvo, SKF and others in the Gothenburg area.

Overall, there are close links between the local and regional government, industry and academia in the region that has created efficient collaboration in the innovation system of West Sweden in a triple helix manner. West Sweden however, is by international standards a small region and have a small domestic market for outputs. The economy is dependent on exports and exposed to both international economic stagnation and growth cycles.

R&D in West Sweden

Traditionally the industrial sector in West Sweden has been responsible for a total of around 25 percent of all industry related investments in Sweden\(^{14}\). In 2013 the total spending on R&D alone was almost 26 billion SEK in West Sweden, accounting for over 20 percent of the total spending on R&D in Sweden as a whole. The private business sector has the highest share of the total R&D spending. The bulk of this is by Volvo Cars, GKN Aerospace, SKF and Ericsson.

**SPENDING’S ON INTRAMURAL R&D MILLION SEK 2007-2013**

<table>
<thead>
<tr>
<th>Region</th>
<th>2007</th>
<th>2009</th>
<th>2011</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Halland</td>
<td>365</td>
<td>607</td>
<td>679</td>
<td>646</td>
</tr>
<tr>
<td>Västra Götaland</td>
<td>21631</td>
<td>24189</td>
<td>25406</td>
<td>25144</td>
</tr>
<tr>
<td><strong>West Sweden</strong></td>
<td><strong>21996</strong></td>
<td><strong>24796</strong></td>
<td><strong>26085</strong></td>
<td><strong>25790</strong></td>
</tr>
</tbody>
</table>

Source: Statistics Sweden

During the period 2007 – 2013, the business sectors share of R&D was on average 75 percent while higher education sector came second with 23 percent. The share of Business sector has declined slowly over time, the share of higher education has increased.

**SPENDINGS ON R&D IN WEST SWEDEN, SHARE PER SECTOR 2007-2013**

<table>
<thead>
<tr>
<th>Sectors in West Sweden</th>
<th>2007</th>
<th>2009</th>
<th>2011</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business</td>
<td>79</td>
<td>78</td>
<td>76</td>
<td>75</td>
</tr>
<tr>
<td>Regions &amp; municipalities</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Private non-profit sector</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Government</td>
<td>0,8</td>
<td>0,7</td>
<td>0,5</td>
<td>0,2</td>
</tr>
<tr>
<td>Higher Education</td>
<td>18</td>
<td>20</td>
<td>21</td>
<td>23</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
<td><strong>100</strong></td>
<td><strong>100</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Source: Statistics Sweden

In Halland the share of business spending is 77 percent and the share of higher education is 17 percent. This reflects the difference in profile of the universities in the two regions were Halmstad university college has a larger share of its turnover in basic education whilst Gothenburg-, and Chalmers technical university has a larger share in research. Other than the university’s already mentioned West Sweden also hosts the university colleges: University of Skövde, Borås University and University West in Trollhättan. There is also a large presence of national research institutions in West Sweden like Swerea IVF, SP and the Victoria Institute.

Innovation

According to the Regional Innovation Scoreboard\(^1\), assessing the innovation performance of European regions, West Sweden is one of Europe’s most innovative regions. The RIS 2016 covers 214 regions across 22 EU countries and Norway. The most innovative regions are usually located in the most innovative countries, although regional innovative hubs exist in so called moderate innovator countries. The map below shows that West Sweden and Skåne is regarded as Innovation Leaders in a European perspective. Oslo is seen as a strong innovator.

REGIONAL PERFORMANCE GROUPS, INNOVATION, IN EUROPE

Source: Regional Innovation Scoreboard 2016

\(^1\) [https://ec.europa.eu/growth/industry/innovation/facts-figures/regional.en](https://ec.europa.eu/growth/industry/innovation/facts-figures/regional.en)
**Key enabling technologies**

Key enabling technologies (KETs) are a group of six technologies (advanced materials, advanced manufacturing technologies, industrial biotechnologies, Nanotechnologies, Micro- and Nano-electronics and Photonics). As KETs are defined they have applications in multiple industries and help tackle societal challenges. KETs are also important because they provide the basis for innovation in a range of products across all industrial sectors, thereby offering a large potential for economic growth and employment. The map below shows that West Sweden have a positive specialization in these areas (KET’s) compared to other European regions.

**High-tech and knowledge intensive businesses**

Employment in knowledge-intensive activities, as measured by employment in medium-high and high tech manufacturing and knowledge-intensive services, is high in West Sweden. West Sweden is one of 17 European regions where performance on this indicator is at least 20 percent above the EU average. As mentioned earlier employment in high-tech and knowledge intensive businesses in the private sector in West Sweden are to a large extent concentrated in a few large companies such as AstraZeneca, Volvo Cars, GKN Aerospace, SKF and Ericsson.
Entrepreneurship

West Sweden has been classified as innovation leader in the Regional Innovation Scoreboard for several years. But there are weaker points. On measures of entrepreneurship the region is often a bit behind the Swedish average. Even though the number of new companies has increased steadily the previous decade it is still lower than in the other large metropolitan areas - Stockholm and Malmö. The total number of new firms in 2015 was 13 463. The number of genuine new firms per 1,000 inhabitants between 16-64 years has risen since the financial crisis. In 2015 the highest number of new businesses per capita in West Sweden was in Halland. In a national comparison Västra Götaland and Halland came in on fifth and seventh place among Swedish regions. In absolute terms, 11 317 companies started in Västra Götaland and 2 146 in Halland.

NEW FIRMS PER 1000POP 16-64 YEARS

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Halland</td>
<td>9,9</td>
<td>8,9</td>
<td>9,4</td>
<td>11,0</td>
<td>12,2</td>
<td>11,3</td>
<td>11,2</td>
<td>12,1</td>
<td>11,4</td>
</tr>
<tr>
<td>Västra Götaland</td>
<td>9,5</td>
<td>9,2</td>
<td>9,5</td>
<td>10,8</td>
<td>11,7</td>
<td>10,7</td>
<td>11,3</td>
<td>11,2</td>
<td>11,0</td>
</tr>
</tbody>
</table>

Source: Statistics Sweden
The number of still active companies among the almost 11,000 businesses that started in 2008 amounted in 2011 to nearly 7,500. The survival rate was 68 percent, equal to the national average.

**THREE YEAR SURVIVAL RATE FROM BUSINESS STARTED IN 2008**

<table>
<thead>
<tr>
<th>Region</th>
<th>Number of business still running in 2011</th>
<th>Number of new firms 2008</th>
<th>Three year survival rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Västra Götaland</td>
<td>6,307</td>
<td>9,256</td>
<td>68%</td>
</tr>
<tr>
<td>Halland</td>
<td>1,061</td>
<td>1,625</td>
<td>65%</td>
</tr>
<tr>
<td><strong>West Sweden</strong></td>
<td><strong>7,368</strong></td>
<td><strong>10,881</strong></td>
<td><strong>68%</strong></td>
</tr>
</tbody>
</table>

Source: Statistics Sweden

The share of employment affected by closure of firms has been low in later years. In 2014 no more than three to four percent was affected by firm closure. The entry rate of new firms was the same producing new employment on a level equal to three to four percent of all employment.16

**BUSINESS CHURN 2014**

<table>
<thead>
<tr>
<th></th>
<th>Entry rate</th>
<th>Exit rate</th>
<th>Turnover rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Halland</td>
<td>4%</td>
<td>3%</td>
<td>7%</td>
</tr>
<tr>
<td>Västra Götaland</td>
<td>3%</td>
<td>3%</td>
<td>7%</td>
</tr>
<tr>
<td><strong>West Sweden</strong></td>
<td><strong>4%</strong></td>
<td><strong>3%</strong></td>
<td><strong>7%</strong></td>
</tr>
</tbody>
</table>

Source: Statistics Sweden

The share of business ownership in West Sweden is low in European comparison. The percentage of people who are either involved in starting a business or are owners/managers of a company is six to eight percent. On a municipal level there are huge differences with the highest rates found in the more sparsely populated parts of northern Västra Götaland. In the municipality of Dals-Ed the business ownership rate is 18% and in neighboring municipalities Bengtfsors and Mellerud the rate is 16%. This periphery effect is probably due to the weak dynamic of the local labor market and the fact that business ownership is more common in primary sectors of the Swedish economy. According to a national entrepreneurship report of 201617 entrepreneurship among women has increased in Sweden, especially in consumer services.

**BUSINESS OWNERSHIP RATE 2014**

<table>
<thead>
<tr>
<th></th>
<th>Business owners</th>
<th>Total employment</th>
<th>Business ownership rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Halland</td>
<td>13,685</td>
<td>180,218</td>
<td>8%</td>
</tr>
<tr>
<td>Västra Götaland</td>
<td>60,433</td>
<td>935,400</td>
<td>6%</td>
</tr>
<tr>
<td><strong>West Sweden</strong></td>
<td><strong>74,118</strong></td>
<td><strong>1,115,618</strong></td>
<td><strong>7%</strong></td>
</tr>
</tbody>
</table>

Source: Statistics Sweden

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16 Total Business churn i.e. exits + entry’s is equivalent of about 7.8% of employment yearly
Primary challenges with respect to the economic development in West Sweden

One major challenge with respect to economic development is to maintain and improve the competitiveness of the industry in the region. To achieve this requires improved productivity, continued investment in research and innovation, developed transport infrastructure which compensates for the region’s semi-peripheral location, and, finally, improved matching and increased labour supply contributing to companies skill supply.

Improved productivity

International productivity statistics suggest that the productivity growth in Sweden decreased the latest years. During 2008-2015 was the average productivity growth lower in Sweden compared to many other OECD countries. Because of the methodological problems in the measurement of productivity, this result should be interpreted with caution. The modest productivity growth in Sweden may partly be a result of temporarily low capacity utilization in the waves of the financial crisis and the debt crisis. The low productivity growth may also be a natural consequence of a fast structural adjustment from high productivity manufacturing to a service sector with a lower (measurable) productivity. The servicification within manufacturing may also dampen measured productivity growth. However, a recent firm-level study, including 9 large multinationals confirms the aggregate results. The study indicates that the productivity level in the included companies are around 10 percent higher in Western Europe than in Sweden.

The improvement in productivity the latest decades has largely been driven by digitalization and automatization. The conditions for a digital transformation of Swedish industry are relatively good, but other countries are catching up. A rough measure of automatization is the use of robots in the industry. Since the 1990s, when Sweden was a clear leader in this development, the increase in the number of robots in Swedish industry has been significantly more modest than in other countries.

Investment in research and innovation

The high R&D intensity in the industry of West Sweden is probably the most important factor explaining the relatively high competitiveness of the industry. Increasingly, companies compete with R&D, instead of commodity production. However, other regions are catching up. West Sweden has gone from second to fourteenth place when it comes to industry investment in R&D in relation to GRP and the private R&D in West Sweden is highly concentrated to a few big multinational companies. One challenge is to diffuse R&D activities to SME:s but it is also important to improve the rate of commercialisation from R&D-activities in SME:s. The results if the Regional Innovation Scoreboard 2016 suggest that West Sweden belong to the group of regions with the strongest innovation performance among SME:s. But for one of the indicators, the sales shares of new-to-market and new-to-firm innovations, West Sweden is below the EU average.

Developed transport infrastructure

The competitiveness of the industry in West Sweden, and in the entire mega region, is disadvantaged by longer distances to the main markets compared to many other countries’ industries. One challenge to keep and attract companies in West Sweden is to bridge long distances through fast and cheap transport solutions.

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18 Konkurrenskraft på företagsnivå – svensk produktion och FoU jämfört med motsvarande verksamheter i andra länder, En rapport från den partsgemensamma arbetsgruppen ”konkurrenskraft på företagsnivå”, http://www.industriradet.se/wp-content/uploads/Konkurrenskraft-p%C3%A5-f%C3%B6retagsniv%C3%A5.pdf
Skill supply
Skill are a decisive factor to companies’ competitiveness. Even if the biggest challenges when it comes to skill shortages are in the public sector, there are also challenges in the industrial sector. In Sweden, the proportion of the population who have recently gained a scientific or engineering degree is lower than the EU average. More worrying, the proportion of pupils leaving primary school without high school eligibility has increased in recent years. Another big challenge in terms of skill supply is the low employment level among newly arrived immigrants. A better use of the skills of this group would reduce skill shortages in the public and private sector, and bring economic development.

Obstacles that prevent companies moving into the region or expanding their operations
In the study *Konkurrenskraft på företagsnivå*, the Pros and Cons of investing and establish operations in Sweden are examined. It concludes that Sweden is ranked high by companies regarding macroeconomic factors. Other strengths are the organizational culture and the cooperation between employers and the unions. Labor cost for production staff is seen as a weakness as is population (market) size and geographical location. Labor cost is, however, becoming less important as a result of increased automatization. The flexibility in the Swedish labor market are ranked as relatively good regarding hiring of staff, but poorer when it comes to the possibility of changing the number of permanent hiring. The lack of public funded “layoff” systems is seen as a disadvantage in Sweden.

The regional innovation report for West Sweden
The regional Innovation Report - West Sweden (Industry 4.0 and smart systems) delivered to the European Commission in November 2016 concludes that West Sweden is a strong region when it comes to Innovation capacity in a European comparison. The report points at three main challenges for the future.

1. Spreading advanced manufacturing processes, solutions and technologies to SME:s
The main companies in West Sweden that are focused on R&D, such as AstraZeneca, Volvo Cars, GKN Aerospace, SKF and Ericsson are all large companies and not so many. The vast amount of SMEs or firms further down in the value chain have not been able to invest in R&D to take on needed new technologies or develop new processes. The regional authorities in West Sweden are aware of this and try to stimulate innovation and technology upgrading in SME:s. An example of this is the “HUB” at the AstraZeneca plant in Malmö where about 20 SME:s cluster on the AstraZeneca compound and use the technology accessible by the larger company.

2. Access to skills and competencies
If we focus on the industries of West Sweden with the highest spending on R&D there are worrying trends ahead. From our own regional analysis we can expect the supply of secondary school engineers to decrease by approximately 40% in large parts of West Sweden by 2025. The current numbers of secondary school engineers will not be sufficient to cover the large proportion of retirements. This projected deficit will to some extent be reduced by an expected surplus of over 2 000 graduate engineers but to what extent these numbers add up, we don’t know.

3. Developing sense of urgency among policy makers and industry
We have recently concluded a project about future effects of automation on local labor markets. The analysis can serve as a starting point for a discussion on which occupations will be subject to the most

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21 http://www.vgregion.se/upload/Regionutveckling/Publikationer/2016/v1%20Bladderbar.pdf
22 http://www.vgregion.se/upload/Regionutveckling/Publikationer/Strukturomvandling%20och%20automatisering_Slutversion3_November%202016.pdf
pressure to transform, quantitatively (in terms of number of jobs) and qualitatively (in terms of job content) in the years ahead. We are also in the process of connecting and accelerating programs for sustainable production, a strategy for smart industry and a strategy for automation. There is a risk that technological development may further enhance regional imbalances. The large cities and the university cities have the highest proportions of their employment in High-Tech and knowledge intensive businesses, those sectors that historically has benefitted from technical development. But, at the same time further automation also gives opportunities in the future to areas outside the urban areas. Anticipated labor shortages may be milder, and productivity improved.

**Main strategies for increased innovative capacity**

The goals of the economic development policy in West Sweden for Region Västra Götaland are presented in the Regional development program, Västra Götaland 2020 and in Halland in the Regional development strategy (see *West Sweden – Regional visions, strategies and general facts*).

One of the overall objectives in VG2020 is that Västra Götaland should be a leading knowledge region. The starting point is that an attractive and competitive society is created by inhabitants who want to and have the possibility to develop. Västra Götaland shall be characterized by good opportunities for education, research and innovation, entrepreneurship and internationally competitive industry. Priorities to achieve this are:

- stimulating entrepreneurship
- creating the conditions needed to realise ideas and start up enterprises
- promoting competitiveness
- attracting more students and researchers and increasing exchange with the outside world
- strengthening the international competitiveness of our research and innovation milieus
- developing arenas for testing and demonstration where new ideas are put into practice
- stimulating national and international cooperation in research and innovation
- strengthening Science Parks and other
- collaboration milieus for research and innovation

One of the main targets in the Growth strategy for Halland is that Halland should be a region that stimulates innovation, renewal and business development. Priorities to achieve this are:

- A long-term funded regional innovation system
- Innovation-driven procurement as a driver for renewal, social inclusion, equality, equal opportunities and innovations
- Investment in Halland’s strengths areas
- An increase in public and private investment in R&D
- Restructuring and renewal of existing businesses
- Entrepreneurship and more start-ups
Prioritized sectors and Areas of strength in Västra Götaland

In the strategy VG2020, thirteen priority sectors/clusters in Västra Götaland are identified: Life science, sustainable transport, and green chemistry, marine and maritime sector, sustainable urban development, material, textile and fashion, sustainable production, cultural and creative industries, renewable energy, food/green industries, ICT and tourism industry.

The priority sectors can be divided into four different categories; strength areas, development areas, areas necessary for knowledge-based development and areas necessary for an attractive and sustainable region (see table below).

The priority sectors in Västra Götaland are stimulated with different measures. Most of the priority sectors have dedicated programs. In December 2016, the Regional Development Board together with the boards for Culture and Environment in Region Västra Götaland invested 500 million SEK in revised or new programs in six of the priority sectors.

PRIORITIZED SECTORS IN VÄSTRA GÖTALAND

<table>
<thead>
<tr>
<th>Areas of Strength</th>
<th>Areas of Development</th>
<th>Areas necessary for knowledge-based development</th>
<th>Areas necessary for an attractive and sustainable region</th>
</tr>
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<tbody>
<tr>
<td>Life science</td>
<td>Marine and maritime sector</td>
<td>ICT</td>
<td>Food/green industries</td>
</tr>
<tr>
<td>Sustainable transport</td>
<td>Material</td>
<td>Sustainable production</td>
<td>Renewable energy</td>
</tr>
<tr>
<td>Green Chemistry</td>
<td>Textile and fashion</td>
<td></td>
<td>Cultural and creative industries</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Tourism industry</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sustainable urban development</td>
</tr>
<tr>
<td>Criterion:</td>
<td>Criterion:</td>
<td>Criterion:</td>
<td>Criterion:</td>
</tr>
<tr>
<td>Business Specialization</td>
<td>Is on track to qualify as a strength area</td>
<td>Necessary for knowledge-based development</td>
<td>Necessary for sustainability and attractiveness</td>
</tr>
<tr>
<td>Research Specialization</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public support structure</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Areas of Strength in Västra Götaland

Life science, the transport sector and the chemical sector are the three sectors that are most clearly characterized by simultaneous strengths in industry, academic research and support structures in the public sector.

The automotive industry is the engine of the transport sector in West Sweden. The industry is the center of a vehicle cluster of automotive manufacturers, suppliers, engineering consultants, institutions, and automotive major research and training in universities and colleges. About 32 500 people representing approximately four percent of the workforce in West Sweden are directly employed in the automotive industry. Many more are indirectly employed by the sector. A great deal of research and vehicle development in Sweden takes place in West Sweden or organized by the actors in the region.

Development of renewable fuels, electrification of drive systems, automation and connectivity of vehicles

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In Appendix 3 a more detailed description of the priorities and practical work done for Cluster Development in the Gothenburg Region by Business Region Gothenburg is given.
including new services are global trends and areas that can be developed in the region through research and innovation.24

Another part of the transport sector is logistic. Västra Götaland has long been a center for trade and logistics in Scandinavia. The region is home to Scandinavia’s largest port, and Sweden’s second largest airport. Gothenburg and West Sweden is an important import and export hub and has been named Sweden’s best logistics location for more than ten years running. A key factor is the Port of Gothenburg, which has a reach of about 190 million inhabitants in ten Nordic and Baltic countries.

In the automotive sector a number of important intermediary collaboration and development platform exists. Test Site Sweden is a national arena for transport and environmental engineering with a base at Lindholmen Science Park in Gothenburg.25 The arena provides a neutral platform for cooperation within vehicle, transportation and environmental engineering. Test Site Sweden initiates and develops test and demonstration environments for vehicles in order to support the development of sustainable transport. It is also a partner of VINNOVA’s program ‘Testbeds in environmental engineering’. Asta Zero in Borås is the world first full-scale test environment for future road safety.26

The life science sector in Västra Götaland employs more than 7 000 in around 300 companies. This represents around a fifth of Swedish employed in life science. Employment is largely concentrated in the Gothenburg region, with AstraZeneca as the dominant company. Västra Götaland has had a more positive development than the rest of Sweden and employment has risen quite steadily since the late 90s. Meanwhile, life science is an industry in rapid transition. Västra Götaland has strong research environments in life science and a long tradition of cooperation between research and industry. Example of this cooperation is titanium implants and Losec. Sahlgrenska Academy (University of Gothenburg) and Chalmers University of Technology are strong research actors. Areas of research that stands out with high academic specialization and publishing are oral surgery, maternity care, urology, hepatology, geriatrics and transplantation.27 Another successful research field is systems biology. Outside of Gothenburg there is competitive research in specific fields such as bioinformatics at the University of Skövde.

Sahlgrenska University Hospital is Northern Europe’s largest university hospital and Västra Götaland has a leading position in Europe in terms of number of clinical studies. Gothia Forum is a unit within Region Västra Götaland dedicated towards procuring support and resources for clinical research. Sahlgrenska Science Park offers researchers and innovators evaluation and helps with development and funding of business. Wallenberg Center for Molecular Medicine is a national initiative to strengthen Swedish research in the life sciences that began in 2014. Gothenburg is one of four nodes where excellent researchers shall be recruited and work in close cooperation with health care. Region Västra Götaland adds 15 million euro over a 10 year period on this venture.

West Sweden is home to several of the most important industries in chemistry in Sweden with a potential for increased production or utilization in bio-based, sustainable chemical and material products and production of renewable energy. The region offers a good environment for research and innovation through the universities and several research centers that are recognized within innovation and knowledge creation related to sustainable development. The actors in the chemical industry cluster have focused on issues linked to infrastructure, technological development, and knowledge creation. Some examples are expansion and secured supply to the regional gas grid, expansion of the district heating system with waste heat from industry and the creation of the Swedish knowledge center for renewable transportation fuels, f3, which is coordinated by Chalmers. One initiative within the chemical and materials sector, originating

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24 A good example on the quality and ambitions in the work to solve societal challenges in partnership between different actors can be seen in this move on self-driving cars taken forward by Volvo and Gothenburg city in the Drive Sweden project. https://www.youtube.com/watch?v=WmYsyWYDOxuI
26 http://www.astazero.com/
27 Specialiseringar inom näringsliv, akademi och offentlig sektor i Västra Götaland, VGR 2016:1
in the chemical industry cluster, is the vision Sustainable Chemistry where the chemical companies in the city of Stenungsund, Sweden’s largest chemistry and materials cluster, have developed a joint ambition to work toward a fossil-independent industry in West Sweden by 2030.

**Areas of strength in Halland**

Region Halland defines a strength area as one where there are good conditions for development and growth based on particular themes. Three areas of strength have been identified in Halland: health innovation, green growth and tourism industry.

For several years *health innovation* has developed in co-operation between Halmstad University, industry and commerce, and the public sector. This has contributed to Halmstad University profiling itself in the cross-disciplinary field of health innovation. New companies have started and a number of products and services have been launched commercially. “Hälsoteknikcentrum Halland” is well on the way to become established as a significant environment for health innovation. A further expansion of the health innovation field in close collaboration with Halmstad University is important.

*Green growth* in Halland means first and foremost renewable energy and raw materials, high-quality food and products and service from soil, forest and water. Halland has good natural conditions, a high level of knowledge and a well-developed structure for industry, logistics and entrepreneurship in the fields of soil, forest and water. There are several competent players who can make active contributions to innovation and renewal in green growth.

*Tourism industry* in Sweden is growing rapidly. Tourism is an interesting industry in that it is bound to a particular place and often offers job opportunities also to young people and people with less education. Developing Halland as a destination creates the conditions for new visitors, more companies, increased investment. The development of destinations is thus a way of contributing to the attractiveness of the region. Within the framework for this thematic areas such as food, rural development, culture/sport and creative industries are brought together.

**Science parks in West Sweden**

The science parks in the region make up an important infrastructure to implement a research and innovation strategy where businesses, universities, institutes and public bodies set their agenda jointly and participate in the implementation of actions and initiatives. The open platforms have developed into important infrastructure for research and innovation, and have a more dynamic role than traditional science parks. The intention is to bring together incubators, major research projects and company networks to stimulate ideas and innovative processes.

The regions have successfully created these platforms for interactive open innovation in prioritized areas during the last fifteen years, such as automotive/air transport, health/biomedicine, the maritime sector, creative industries, and smart textile. The OECD Territorial Review of Sweden has also acknowledged the model of interactive open innovation platforms as a best practice, stating that: "These platforms place West Sweden on the European research map as a region that is innovative, entrepreneurial and 'thinks outside the box'. Furthermore, the platforms have been efficient in improving innovation capabilities of SMEs and supporting them to be competitive on a global market.
The science parks in West Sweden are:

- **Lindholmen Science Park** (Göteborg) is an international Science Park specialised in three areas: intelligent vehicles and transport systems; information and communication technology; and modern media and design. ([lindholmen.se/en/](lindholmen.se/en/))
- **Gothia Science Park** (Skövde) has an IT-profile with specific focus on computer games technology. ([gsp.se/en](gsp.se/en))
- **Innovatum Science Park** (Trollhättan) has its main strategic focus on production engineering, creative industry and audio-visual technology; and energy technology and environmental engineering. ([innovatum.se](innovatum.se))
- **Johanneberg Science Park** located (Göteborg) primarily focuses on the fields of urban development, energy, and material & nanotechnology. ([johannebergsciencepark.com/en](johannebergsciencepark.com/en))
- **Sahlgrenska Science Park** (Göteborg) focuses on pharmaceutical, medical technology and medicine. ([sahlgrenskasciencepark.com/](sahlgrenskasciencepark.com/))
- **Science Park Borås** focuses on three areas: textile; trade and logistics; and society development.
- **Science Park Halmstad** is mainly an incubator with focus on business coaching.

**New business creation and SME development**

West Sweden conducts a number of activities aimed at influencing and changing attitudes to entrepreneurship and innovation. There are several activities that target the education system for instance by influencing attitudes. One example is “Ung Företagsamhet” (Young Entrepreneurship), providing young people the opportunity to try to start and run a business during high school. All of the region’s universities participate in the Drivhus foundation, an attempt to increase the entrepreneurial thinking and getting students to develop their ideas. The regions also funds academic entrepreneurial education in order to educate future entrepreneurs and assist in the commercialization of new knowledge. In collaboration between university and industry the aim is to develop promising ideas or research results into new businesses. The programs are offered at Chalmers University of Technology and University of Gothenburg.

Incubators are contributing to the development of start-ups. Through the incubators, selected entrepreneurs and business projects are given the opportunity to be part of an environment where they are supported by experienced business developers who create a stable platform for developing the idea into a business. Incubators usually offer support and networking for all issues important to the company and thereby aims to be a tool for creating growth. Most of the incubators in West Sweden are related to a university. Companies operating in West Sweden are eligible for support, in the form of financing and advice, from Almi Väst or Almi Halland. Region Västra Götaland provides various types of financing for those starting their own business. Companies can apply for support towards market and product development, environmental accreditation and industrial design.
SME development

The financing and advice provided by, for instance, Almi Väst and ALMI Halland, briefly described above, is an important part in stimulating growth among SMEs. A main focus is to create easy access to research and innovation networks for SMEs. One example is the program ‘Industrial Dynamics’ which aims at supporting SMEs in West Sweden technology development, business and market development, finding the right paths within the EU instruments and initiatives and to get access to the combined expertise of twelve expert organizations ranging from universities to research institutes and industrial development organizations. The program has been awarded a prize as the most innovative in Europe.28

Economic Potential

Regional economic development policy in West Sweden is strategic and active. The preconditions for a good result are strong. The potential for economic and sustainable development are in general seen as very good by independent assessors. Two examples are the Regional Potential Index by Nordregio based on an evaluation of the demographic, economic and labor force potential and the BAK Basel Potential Index based on the structure and size of export sector, its productivity and the general political situation in a region. In the Nordregio Potential Index Oslo is number 1, Akershus 2, Copenhagen 4 and Västra Götaland 12 out of 115 regions in the Baltic Sea area.

28 http://www.industrielldynamik.se/
30 BAK Basel Regional Economic Analysis (Dropbox – Reports West Sweden)
Inclusive development, human capital and education

Megaregion Western Scandinavia
The Megaregion hosts a large number of high-quality higher education institutions (HEIs), mainly concentrated in the three major metropolitan areas. The number of students enrolled at HEIs exceeds 250,000. There is a concentration of higher educated individuals in the metropolitan areas, and the education level of the economically active population outperforms the national averages (in Norway and Sweden) in almost all parts of the Megaregion. In a EU28 perspective, tertiary education levels (ISCED 5+) among 30-34 year olds, particularly among females, are exceptionally strong in the metropolitan areas of Western Scandinavia.

But there are several challenges. The cooperation between the universities could increase. More students need to leave school with grades in all subjects. More cooperation and benchmark in the region could bring new solutions.

The ability to create jobs also for people with low education is a key question for inclusive growth, and a common problem in the Megaregion. The unemployment for people with higher education is almost non-existent in 2017. A better integrated region would mean more job opportunities in a wider spectrum of the economy.
In the context of regional development, the most important consequences of globalization are obvious. For those who dare and can, for the well-educated and motivated, an ever-larger world of opportunities opens up. The decline in young populations in most parts of the world and the accelerating level of knowledge in the economy increases the importance for regions to attract inhabitants with good qualifications. As the economy gets increasingly global, R&D and knowledge-intensive companies also become more dependent on locating in attractive regions.

In an international perspective, West Sweden has a position somewhere close to the Western Europe average in terms of education level and quality of universities. This indicates a fairly good position, as well as plenty of room for improvement. A challenge for West Sweden is to gain on the top achievers in this respect.

There are also major differences within West Sweden. Gothenburg and the surrounding municipalities have a large share of highly educated and research intensive universities. Gothenburg also has a local labor market with considerable size, making it easier for companies to access skills in demand. For the development of West Sweden as a whole, it’s important that sub-regional centers of higher education and innovation continues to develop. This put stress on the roles of the university colleges in Borås, Skövde, Trollhättan and Halmstad. The general level of students in universities and university college is lower than the share of population. To only have to universities is also a weakness in the second most important region of Sweden.

Education

Starting with an international perspective, West Sweden has a fairly good position in terms of education level. Work participation is slightly higher than the Western Europe average, and the share of the labor force with a tertiary education is also somewhat higher. However, capital regions as Oslo, Stockholm, Vienna and Helsinki have a more beneficial position. In other words, there is plenty of room for improvement.

LABOR FORCE WITH SECONDARY AND TERTIARY EDUCATION, BAKBASEL 2015

Turning to West Sweden, 40 percent of the population 25-64 year-olds has a tertiary degree. Since the early 90s, the level of education has raised steadily. Largest share of the population with a tertiary education is to be found in Gothenburg and surrounding municipalities. Municipalities with a smaller proportion of highly educated are situated in the north and in the east.
The time spent in education has increased and as a result entry to the labor market has been postponed a couple of years. The importance of education is beyond question. Those with a tertiary degree are more satisfied with life, enjoy better health, feel greater trust in those around them, are seldom unemployed, have better financial resources, rarely live alone and state to a higher degree that they can influence the way society is developing. Demand for skilled labor continues to be high.

Looking at migration pattern for people with a tertiary education, West Sweden has a positive net migration from most counties in Sweden. The exception is Stockholm, the most populous region in Sweden.

MIGRATION TO AND FROM WEST SWEDEN FOR PEOPLE WITH TERTIARY EDUCATION 2015

<table>
<thead>
<tr>
<th>County</th>
<th>Migration to West Sweden</th>
<th>Migration from West Sweden</th>
<th>Net migration</th>
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<tr>
<td></td>
<td>25-34 y.</td>
<td>35-64 y.</td>
<td>25-34 y.</td>
</tr>
<tr>
<td>Skåne</td>
<td>1 247</td>
<td>485</td>
<td>1 104</td>
</tr>
<tr>
<td>Stockholm</td>
<td>1 216</td>
<td>631</td>
<td>2 001</td>
</tr>
<tr>
<td>Uppsala</td>
<td>324</td>
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<td>254</td>
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<tr>
<td>Södermanland</td>
<td>108</td>
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<tr>
<td>Östergötland</td>
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<td>Jönköping</td>
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<tr>
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<td>Gävleborg</td>
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<td>Norrbotten</td>
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<td>64</td>
<td>98</td>
</tr>
</tbody>
</table>

Total 7 216 | 3 489 | 7 221 | 3 445 | -5 | 44
Higher education

In order to be competitive in a global economy, West Sweden needs to be attractive to students and researchers. As we have seen, West Sweden is one of the regions in the world where industry invests most resources in R&D, compared to its population and economic output. A sufficient supply of skills locally is crucial to companies’ ability to stay competitive. The importance of higher education and research should also be stressed as a platform for innovation in both existing and new sectors.

There are six universities or university colleges in West Sweden. Since the early 90s, the number of students has increased dramatically. This development has been fueled by an expansion of the university colleges in Borås, Halmstad, Skövde and Trollhättan. The expansion of higher education has been important for regional development in West Sweden, creating sub-regional centers of higher education and innovation. It's pivotal for the region as a whole that these regional centers continue to develop.

**NUMBER OF STUDENTS, AUTUMN SEMESTER 1995-2015**

<table>
<thead>
<tr>
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<td>Göteborgs universitet</td>
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</tr>
<tr>
<td>Högskolan i Borås</td>
<td>3 495</td>
<td>5 769</td>
<td>6 676</td>
<td>7 884</td>
<td>6 870</td>
</tr>
<tr>
<td>Högskolan i Halmstad</td>
<td>3 386</td>
<td>5 165</td>
<td>6 082</td>
<td>6 760</td>
<td>6 384</td>
</tr>
<tr>
<td>Högskolan i Skövde</td>
<td>2 435</td>
<td>3 793</td>
<td>4 979</td>
<td>6 881</td>
<td>5 793</td>
</tr>
<tr>
<td>Högskolan Väst</td>
<td>1 853</td>
<td>4 369</td>
<td>4 871</td>
<td>6 523</td>
<td>5 808</td>
</tr>
<tr>
<td><strong>Total West Sweden</strong></td>
<td>43 468</td>
<td>52 419</td>
<td>61 931</td>
<td>69 429</td>
<td>64 376</td>
</tr>
</tbody>
</table>

Even though the lion’s share of the increase in students is due to the expansion of the new university colleges in West Sweden, the numbers of graduated from second cycle programs are concentrated to Gothenburg University and Chalmers University of Technology. These institutions are also by far the most research intensive and have the largest number of international students.

**NUMBERS GRADUATED FROM UNIVERSITIES IN WEST SWEDEN BY LENGTH OF EDUCATION, ACADEMIC YEAR 2014/15**

<table>
<thead>
<tr>
<th>University</th>
<th>&lt;3 y.</th>
<th>3 - 3.5 y.</th>
<th>4 - 4.5 y.</th>
<th>&gt; 5 y.</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chalmers tekniska högskola</td>
<td>3</td>
<td>1155</td>
<td>96</td>
<td>1831</td>
<td>3085</td>
</tr>
<tr>
<td>Göteborgs universitet</td>
<td>161</td>
<td>3747</td>
<td>1384</td>
<td>1296</td>
<td>6588</td>
</tr>
<tr>
<td>Högskolan i Borås</td>
<td>127</td>
<td>1531</td>
<td>578</td>
<td>66</td>
<td>2302</td>
</tr>
<tr>
<td>Högskolan i Halmstad</td>
<td>34</td>
<td>933</td>
<td>302</td>
<td>23</td>
<td>1292</td>
</tr>
<tr>
<td>Högskolan i Skövde</td>
<td>129</td>
<td>702</td>
<td>166</td>
<td>3</td>
<td>1000</td>
</tr>
<tr>
<td>Högskolan Väst</td>
<td>129</td>
<td>1076</td>
<td>211</td>
<td>1</td>
<td>1417</td>
</tr>
<tr>
<td><strong>Total West Sweden</strong></td>
<td>583</td>
<td>9144</td>
<td>2737</td>
<td>3220</td>
<td>15684</td>
</tr>
</tbody>
</table>

In terms of quality of universities, West Sweden once again can be said to be in a fairly good position. West Sweden as a whole is a bit behind the Western Europe average. Västra Götaland alone do slightly better. Both in terms of education level and the quality of universities, West Sweden is near the Western Europe average.
The index in figure x above relies on the CWTS Ranking of Leiden. Quality is measured by the share of publications in all sciences of universities in the region which belong to the top 10 percent cited publications. The region with the highest share of such publications scores 100. The quality of universities in international collaboration refers to the proportion of a university’s publications that have been co-authored by two or more countries.

**Skill mismatch**

West Sweden has a general problem with imbalances between supply and demand for different education groups. If current development continues, the outcome is likely to be future imbalances. By 2025 the number of employed is expected to increase by 70,000 people in West Sweden. Growth is mainly expected in the service sector. The construction industry is also expected to expand while employment in manufacturing decreases.  

**Shortage of teachers, health care personnel and engineers expected**

If today’s trend in education continues there may be a shortage of 8,000 teachers/educators by 2025. The demand for qualified teachers in compulsory schools and subject teachers is expected to rise. At the same time, supply is expected to remain largely unchanged. An increased shortage of special teachers and vocational teachers is also forecast.

In the area of healthcare it is estimated that there will be a shortage of trained occupational therapists, biomedical analysts, dispensers, physiotherapists, midwives, specialist nurses, dental nurses and dentists, as well as those with upper secondary qualifications from health and social care. There will be a shortage of as many as 8,600 with secondary school education in nursing and care by 2025. This shortage is due to an ageing population that produces an increased demand for elderly care staff.

The supply of secondary school engineers is expected to decrease by approximately 40 percent by 2025. The current numbers of engineers will not be sufficient to cover the large proportion of retirements. A shortage of 8,000 secondary school engineers is expected. This deficit will be alleviated to some extent by an expected surplus of over 2,000 graduate engineers. Supply and demand for graduate engineers is expected to be in balance by 2025. However, a small shortage of graduate engineers specializing in machines, vehicles and marine engineering is expected.

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31 Utbildnings- och arbetsmarknadsprognos för Västra Götaland med sikte på 2025, VGR
Alarming trend in school

Education and school results constitute a starting point to discuss poverty and social inequality. On order to enter the labor market, a complete secondary education is almost mandatory. An alarming trend is that a growing share of pupils fails to complete primary education. A decade ago 90 percent completed primary education compared to 85 percent today. In certain primary schools as few as 40 percent get through, indicating a big variation between schools. Boys are less successful than girls. Failure in school is strongly linked to immigration background and parents’ educational background. In this context, age at the time of immigration is important. Pupils who immigrated before reaching school age become eligible for upper secondary school at nearly the same levels as natives. The percentage is significantly lower for those who immigrated at age 13 or older.

Immigration background is a predictor. Certain primary schools show poor results, and they are often located in areas with low socio-economic status and a large share of immigrant population. Put together, this links school issues to a wider integration debate.

Employment

Starting with an international perspective, job creation has been strong in West Sweden compared to Western Europe average. The economy has performed well the last decade.

### Employment Growth, Bakbase 2015

![Graph showing employment growth from 2006-2015 and 1996-2005](graph)

However, job creation in West Sweden is uneven distributed. Gothenburg is the driver of employment growth in West Sweden since 2006 and the city benefits clearly from the transition towards an increasingly urban economy, founded on knowledge and services. During the same period, the local labor markets of Borås and Halmstad has enjoyed a reasonable good development, while other areas have had a negative development. The figures for 2015 are strong in the whole region meaning that all regional centers now have positive job growth after the financial crisis (2009-2015).

### Employment Growth 20-64 Year-olds, 2006-2014 by Labor Market

<table>
<thead>
<tr>
<th>Area</th>
<th>Change in numbers</th>
<th>% change</th>
</tr>
</thead>
<tbody>
<tr>
<td>LM-Halmstad</td>
<td>1 617</td>
<td>2.9</td>
</tr>
<tr>
<td>LM-Bengtstors-Dals-Ed</td>
<td>-440</td>
<td>-7.3</td>
</tr>
<tr>
<td>LM-Gothenburg</td>
<td>40 316</td>
<td>8.5</td>
</tr>
<tr>
<td>LM-Strömstad</td>
<td>180</td>
<td>1.8</td>
</tr>
<tr>
<td>LM-Trollhättan-Vänersborg</td>
<td>-2 025</td>
<td>-2.3</td>
</tr>
<tr>
<td>LM-Borås</td>
<td>2 483</td>
<td>2.9</td>
</tr>
<tr>
<td>LM-Lidköping-Göteborg</td>
<td>-1 068</td>
<td>-3.2</td>
</tr>
<tr>
<td>LM-Skövde</td>
<td>-737</td>
<td>-0.9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>40 326</strong></td>
<td><strong>4.9</strong></td>
</tr>
</tbody>
</table>

32 Att motverka skolmisslyckanden – konsten att kunna ha två tankar i huvudet samtidigt… Västra Götalandsregionen, 2016
Turning to employment rate, there are parts of West Sweden with high work force participation. In the sub-urban municipalities surrounding metropolitan Gothenburg the rate is around 85 percent (Härryda, Kungsbacka, Bollebygd and Lerum). But there are also parts of West Sweden where the employment rate is low, especially in municipalities in the north, west of Lake Vänern, and in Trollhättan and Gothenburg. The employment rate for municipalities with universities is lower due to relative large student population. Further on, the employment rate for the municipalities near Norway is not adjusted for cross-border commuters. The mean employment rate in West Sweden is 78 percent. Educational level correlates positively with employment. Most municipalities with a low employment rate also have a relative large share of people with only a primary education.

Employment rate varies greatly between municipalities. It also varies within municipalities. To give an example, the figure shows the employment rate in six neighborhoods in Gothenburg, Borås and Trollhättan. These neighborhoods have all been labeled by the Swedish Police as characterized by low socio-economic status and criminal activity. In these areas unemployment are high, housing poor and access to welfare services low. In total there are 14 such neighborhoods/areas in West Sweden, 10 in Gothenburg, one in Borås, Trollhättan, Falkenberg and Halmstad. The problem of poverty and social exclusion has clearly a spatial dimension. Many inhabitants in these areas are foreign-born. This leads us to the issue of integration, a major challenge for West Sweden.

### Employment Rate 20-64 Year-olds in West Sweden 2014

<table>
<thead>
<tr>
<th>Area</th>
<th>Employment Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>West Sweden</td>
<td>78</td>
</tr>
<tr>
<td>Bergsjön (Göteborg)</td>
<td>48</td>
</tr>
<tr>
<td>Gårdsten (Göteborg)</td>
<td>54.6</td>
</tr>
<tr>
<td>Hjällbo (Göteborg)</td>
<td>50.9</td>
</tr>
<tr>
<td>N:a Biskopsgården (Göteborg)</td>
<td>49.2</td>
</tr>
<tr>
<td>Kronogården (Trollhättan)</td>
<td>42.4</td>
</tr>
<tr>
<td>Hässleholmen (Borås)</td>
<td>52.1</td>
</tr>
</tbody>
</table>

Labor market integration

In recent years, immigration has increased, in particular for persons born outside Europe (EU/EFTA). This inflow poses major challenges to both the labor market and the educational system. However problematic this might be, the large immigration also brings opportunities to exploit for West Sweden.

SHARE OF UNEMPLOYMENT 20-64 YEAR-OLDS IN VÄSTRA GÖTALAND 2014

For persons born outside Europe, unemployment is high and the employment rate is low. Many have immigrated as refugees or family members of refugees and have thus spent a short time in Sweden. This group meets particular thresholds on the labor market, for example discrimination, linguistic shortcomings, less effective social networks and difficulties in validating skills acquired in the homeland.

EMPLOYMENT RATE FOREIGN BORN, BY NUMBER OF YEARS IN SWEDEN, WEST SWEDEN 2014

Time spent in Sweden is a predictor for employment. It takes time to acquire necessary language and job skills. It takes longer time for woman compared to men, adding a gender perspective to integration. It takes longer time for refugees and their family members to establish themselves on the labor market compared to other groups of foreign-born.

Looking at opportunities, immigrants can fill labor markets gaps and thereby mitigate various shortages emanating from changing demographics in the native population (getting older). This happens already. Foreign-born are the most important force behind recent years increase in employed people, emphasizing the upsides of immigration. If integration were better, the contribution would be greater.

NUMBERS EMPLOYED 2007 AND 2014 IN WEST SWEDEN, NATIVE- AND FOREIGN-BORN

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Native-born</td>
<td>750 624</td>
<td>746 096</td>
<td>-4 528</td>
</tr>
<tr>
<td>Foreign-born</td>
<td>102 160</td>
<td>129 265</td>
<td>27 105</td>
</tr>
<tr>
<td>Total</td>
<td>852 784</td>
<td>875 361</td>
<td>22 577</td>
</tr>
</tbody>
</table>

This short analysis puts focus on integration as a labor market issue. But to meet the present challenge a broader view is required. Integration as a problem has a spatial dimension, when immigrants get “locked-
in” in areas characterized by low socio-economic statues and criminal activity. School is pivotal. Pupils who immigrated before reaching school age become eligible for upper secondary school at nearly the same levels as natives. The percentage is significantly lower for those who immigrated at age 13 and older.\footnote{Integration – establishment of foreign born persons in working life and in society, Statistics Sweden 2016}

Failure in school is strongly linked to immigration background and parents’ educational background. Integration policy must be improved. The whole of society, including civil society, needs to be involved more effectively than has been the case. Better integration in terms of more equal living conditions is crucial for those who are born in Sweden and those who have moved to Sweden to escape war and persecution.

**Income disparities**

The past 10-15 years has been a period of sustained wage growth in real terms. Real-term disposable income has risen in all groups. At the same time, income disparities have increased in the whole of West Sweden.

Looking at West Sweden, the largest income disparities are to be found in Gothenburg. The highest levels of income are concentrated in municipalities surrounding Gothenburg.

<table>
<thead>
<tr>
<th>Subregion</th>
<th>2010</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fyrbodal</td>
<td>0,2886</td>
<td>0,3019</td>
</tr>
<tr>
<td>Gothenburg region</td>
<td>0,3218</td>
<td>0,3257</td>
</tr>
<tr>
<td>Sjuhärad</td>
<td>0,2774</td>
<td>0,2874</td>
</tr>
<tr>
<td>Skaraborg</td>
<td>0,2706</td>
<td>0,287</td>
</tr>
<tr>
<td>Halland\footnote{In this case Kungsbacka belongs to Gothenburg region.}</td>
<td>0,2948</td>
<td>0,2987</td>
</tr>
</tbody>
</table>

\footnote{In this case Kungsbacka belongs to Gothenburg region.}
Adding a children’s perspective, the figure shows the share of low income households with children in West Sweden. Put together with previously shown maps (employment rate, Gini-coefficient and disposable income) it’s easy to identify the municipalities with the most severe social problems. It should be kept in mind while looking at the figure that living costs, not at least housing costs, differ a lot over the region.

Another perspective on social exclusion is presented in the figure below. The figure shows the share of the population that is being supported economically by the welfare system. 15 years ago almost 20 percent of the population in West Sweden was on welfare to some extent. Today the share is lower, around 16 percent. The plunge after 2006 depended in part to political reforms by the then elected center-right government. But there was also a fast growth in employment from 2006-2008. The rise around 2009-10, in economic aid and labor market program, was in large due to the effects of the financial crisis.

**Poverty and social inequality/exclusion**

The transition towards an increasingly knowledge-intensive and urban economy shapes the living-condition for the inhabitants of West Sweden. The past years have been a period of job creation and sustained wage growth in real terms. At the same time, income disparities have increased. The 10 per cent who earn most are receiving a gradually larger proportion of the total income in West Sweden.
Overall, the economy of West Sweden has performed well recent years. Job creation and wage growth is strong in an international perspective. Having said that, big challenges exist relating to social inequality. Integration is a challenge. Immigration has increased, particular for persons born outside Europe and for refugees, putting pressure on educational systems, labor market and housing. A broad view is required to deal with this issue, engaging a wide range of stakeholders. A successful integration policy would bring strong social and economic returns to West Sweden. Even more important is that it would give people fleeing from war and persecution a more decent life.

Apart from integration, different municipalities and neighborhood in West Sweden has social problems in terms of low employment rate, low incomes and poor school results. As a result, the future prospects for many individuals in these areas are bleak and health poor.

**Gender equality**

The issue of gender equality is a high priority in Sweden and West Sweden. Developments during the last few decades are both promising and worrying. While salaries and jobs are becoming more equally distributed, choices of education and professions are changing slowly and power is distributed to a large extent according to old traditions. The gender traditions of educational choices must change if future labour market is to work efficiently. Entrepreneurship must become as common among women as men. Through giving general priority to the issue, development work could also help power to be distributed more equally between women and men.

**A gender traditional labor market that changes slowly**

The labor market is traditionally and still very divided between sexes in West Sweden. Women occupy more than three out of four jobs in health services, social care and education. Men have the same position when it comes to ICT, manufacturing, transport, energy, agriculture and construction. The gender structure of the labor market is changing, but slowly. The main trend is that there are a higher percentage of men in the industries normally dominated by women in 2015 than there was ten years earlier. The jobs traditionally dominated by men decrease over time. The fast growth in number of jobs in the industries dominated by women means that the overall gender balance on the market still is good. A positive trend is that the fastest growing industries during the last decades, in the developing urban economy, have a more equal gender balance.
Housing

Megaregion Western Scandinavia

Western Scandinavia is characterized by attractive metropolitan centers and an attractive environment revealed by high property prizes and returns on investment in building all the way from Copenhagen to Oslo. The housing market at the same time constitutes one of the biggest challenges for the region. There are severe imbalances in the market in all parts of the area. The assessment made by the responsible authorities is that building activity needs to increase between 20 and 50 percent. Young people and people with less financial resources are most affected. The problems are manifold, including market failures, rules and regulations, extensive rights to appeal etc. The solutions need to be formulated in the respective countries and regions but increased connectivity in and between the metropolitan centers and regions would contribute to better functioning markets.
The failure to establish a housing market that works for all is one of the main challenges in the Swedish society today. The entrance barrier for young people and people with less economic resources are too high. In principle all municipalities in West Sweden reports a shortage of dwellings. The building activity needs to increase with at least 20 percent from today's figures. Different projects have been introduced in West Sweden to help solve the situation, but this will not be enough. Problems include market failures, rules and regulations, etc. In another perspective, property prices reveal the attractiveness of the metropolitan Gothenburg region and the coast, all the way from Halmstad in the south to Strömstad in the north. The profitability when building in this area is high. In the coming decades the largest urban development project in Scandinavia will be implemented in central Gothenburg. There is an ambition to build in a way that makes it possible also for those with less economic resources to live in the area.

50 percent of the inhabitants in West Sweden live in apartments and the other half in their own houses. Two thirds of the apartments are rented while one third is owned by the tenants. One fifth of the disposable income is used for the costs of living in the average Swedish household. The share has been slowly diminishing during the last decade due to lower loan rents and a strong increase in disposable income for people working. The highest share is paid by those living in rented apartments (28 %) followed by those in owned apartments (20 %) and those owning their own house (16 %). The reason for these differences is mainly that people in rented apartments in general have lower disposable income. The figures are for Sweden and should also give a good picture of the situation in West Sweden in general.

The county administrative board in Västra Götaland states that the competition in housing construction is weak and leads to increased living costs. The annual rental per square metre for new tenancies in Greater Gothenburg in 2014 was just over SEK 1 700 per square metre. A dampening of the price development for new production would increase demand from several groups on the housing market. The shortage of housing, and in particular the lack of apartments for rent, has been one of the largest obstacles to newly arrived persons with residence permits in their efforts to start to establish themselves in society. In 2016 more than 10,000 persons who had been granted residence permits remained in the Migration Board's emergency accommodation in West Sweden. According to the municipalities there is a shortage of housing for newly arrived and also for young people in all of the municipalities in the region.

That the Swedish housing market works less well than in the other Nordic Countries becomes obvious looking at the map of building activities to the right. More houses per inhabitant are built in all the other Nordic countries, even if the Swedish part

of Western Scanadinavia have relatively better figures than many other parts of Sweden, due to high attractiveness at the coast.

56,000 dwellings have been completed in West Sweden between 2006 and 2015. One third of these were built in Gothenburg city with 28 percent of the population. Seven out of ten (40,000 dwellings) were built in Gothenburg labor market region, with 57 percent of the population. Strömstad and to some extent Halmstad labor market regions also have a higher share of new dwellings than of population. Trollhättan, Borås and Skövde labor markets are below its share, with 5-7 percent of the new dwellings each. Municipalities with a high level compared to population are Gothenburg and Varberg, Kungsbacka, Kungälv, Härryda, Falkenberg, Halmstad and Strömstad. Larger municipalities with comparatively few new dwellings are Borås, Vänersborg, Lidköping and Uddevalla.

There is no foreseen change in the attractiveness of the different parts of the region for the coming decades. The need for dwellings in labour market regions as anticipated by Boverket or the period 2012-2025 can be studied in the figure to the right.

Regional property prices and attractiveness

As seen in the figure below prices for houses differ substantially between different parts of West Sweden and make it possible to live quite cheap in more sparsely populated places. In areas by the coast, where jobs are growing and where universities are located, prices has gone up very fast making the market hard to enter for people without a permanent job, a condition to get the loan needed to buy an apartment or a house. Long queues for renting are standard. Increased building costs due to low competition and the Swedish rent system has led to high prices for rented apartments. In the area marked with a yellow box all municipalities are situated in the Gothenburg Labour Market area or at the coast. They are followed by the three regional centres of Borås, Trollhättan and Skövde.

| Source: SCB |

37 Länsstyrelsen Västra Götaland, Bostadsmarknadsanalys 2016.
That the market entry costs have risen fast becomes clear looking at the change in the development of the average price for a house with one or two dwellings for permanent living the last ten years. Prices in 40 out of 55 municipalities in West Sweden have risen with more than 60 percent between 2005 and 2015. The price in Gothenburg has increased with 80 percent. An average house in Gothenburg is now sold for approximately 5 MSEK. In 12 of the more sparsely populated municipalities further away from the regional labour market centres the average price is a fifth of this.

Property prices are at the same time the best measurement for the general attractiveness of a place. The demand for new dwellings in West Sweden is directly linked to market value compared to the costs of building (Tobins Q). This means that new dwellings are first and foremost built in the metropolitan centre of Gothenburg and its surrounding “suburb” cities in the Gothenburg Region, in the four regional centres with university colleges: Borås, Halmstad, Skövde and Trollhättan, and at the attractive west coast, all the way from Halmstad in the South to Strömstad on the boarder to Norway. In more sparsely populated parts building activity is in most cases low. Urbanization continues and the focus on building denser to create more living, sustainable and competitive cities is very strong among planners and politicians, most markedly in Gothenburg city.

The attractiveness of the coast in areas outside cities will not lead to massive investments in new buildings though. There are restrictions on where to build. Shoreland protection and management applies to coastal areas, lakes, waterways and islands throughout Sweden. In general shoreland is defined as extending from 100 meters inland to 100 meters out from the waterline, but this can and has often been extended up to 300 meters by the county boards at the West Coast of Sweden.

In 2016 almost all municipalities in West Sweden report a shortage of housing. The biggest need is for apartments, rented but also owned. In relation to the housing need for the period 2016-2025 the majority of municipalities must increase their rate of housing construction. The assessment is that 78 000 homes are needed in Västra Götaland. By comparison with the level of the number of homes completed in 2015 (a relatively strong year), construction will have to increase by more than 20 percent in West Sweden.

**The largest urban development project in Scandinavia**

The trend of the last decade in West Sweden, to plan new houses in a way that makes cities denser and as an alternative places them in connection to public transport, will continue. Gothenburg city is on its way implementing the largest urban development project in Scandinavia – Rivercity Gothenburg – with 25,000 new dwellings and 45,000 new workplaces in the city centre in the next 10 to 20 years, replacing former shipbuilding and industrial areas. A film that describes the planned investment gives a good overview of the project ([youtube.com/watch?v=OPYugik6wGo](http://alvstaden.goteborg.se/?lang=en)). The summary of housing market forecast for Västra Götaland gives a good picture of the general situation In West Sweden.39

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38 [http://alvstaden.goteborg.se/?lang=en](http://alvstaden.goteborg.se/?lang=en)
39 Dropbox - West Sweden
Housing policy

OECD has in its recent reports on Sweden been clear on what they see as necessary sectors for reforms and what needs to be done inside these to guarantee the living standard of the inhabitants and the competitiveness of the Swedish economy in the long run. The recommendations will, as we understand it, be put forward once again in spring 2017. One of the four areas of reforms suggested is the housing market that is seen as in need of change to increase the supply of housing. The other are education, labour market reforms to make the market more flexible and to make it possible integrate people born in other countries in a better way. The fourth is a tax shift, from work to indirect taxes and property.

When it comes to problems of the housing market in Sweden the answer on what the problem is depends on who you ask. It is clear that the building activity is lower than in our neighbouring countries, regardless of a strong demand. There is no single local or regional answer to this question. Problems have been identified and discussed at the national, regional and local level. National committees have been making suggestions as have different state authorities. Suggestions to change and changes have been made in the areas of taxation, regulations on how to build and building standards, the planning process, appeal procedures, the rent system, the loan system, etc. Another factor is the relatively fast urbanization making the demand for new housing high in the metropolitan regions and the poor functioning of the construction market.

The shortage of homes leads to people living in overcrowded conditions, especially in families with small resources. This has far-reaching consequences and affects among other things children's ability to live fulfilling life and do homework. A higher rate of housing construction is necessary in order to counter an increase in overcrowding and segregation in the regions various residential areas. The lack of smaller and cheaper apartments also makes it difficult for young grown up people to move out from their parent home. In a special study on people aged 20-30 years in West Sweden the lack of available apartments was seen as the greatest local and regional problem. In the yearly analyses on the views of all citizens in the region, the question of available housing has risen to number five on the local level only surpassed only by education, health care, integration/immigration and elderly care.

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40 Dagens Nyheter 25 November 2016, p.27 Interview with Christophe André, OECD.
41 Background report Territorial Review Western Scandinavia for West Sweden p.xxx.
42 SOM-institute Gothenburg University, Trends in West Sweden 1998-2015
Several local initiatives have been taken to reduce the time from planning to actual building. The most important could be increased efforts to a better involvement of citizens in early planning stages and initiatives to build apartments with a more basic standard, making them affordable for the tenants with less resource, as young people, unemployed or students. Gothenburg city has in some cases put forward demand on differentiated rents, making it possible for people with low income to live in more attractive areas, for the opportunity to build on city-land. This could be seen as a kind of social housing initiative.\(^{43}\)

**Social housing** as known in other European countries does exist just in a very limited extent in Sweden. Instead persons in low income households are eligible to different forms of housing assistance depending on a number of factors. Most of the housing assistance is administrated by Försäkringskassan – the Swedish social insurance agency. The different kinds are housing allowance (bostadsbidrag), housing supplements (bostadstillägg), introduction benefit for housing (bostadsersättning).

**SHARE OF HOUSEHOLDS WITH HOUSING ALLOWANCE IN DECEMBER 2015**

![Graph showing share of households with housing allowance in Sweden and three counties over the years 2011 to 2015. The graph includes data from Sweden, 12 Skåne län, 13 Hallands län, and 14 Västra Götalands län. Source: SCB.]

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\(^{43}\) Länstyrelsen Västra Götaland, Bostadsmarknadsanalys 2016. p.61
Urban development, land use and planning

Megaregion Western Scandinavia

There has been a strong and growing trend for more sustainable cities in the metropolitan cores of Western Scandinavia the last decade. A focus on building dense and in close connection to public transport, together with the transition to a more urban economy, has had effect. Earlier tendencies to urban sprawl seem to have come to a halt. Local and regional planning in all metropolitan centers now has sustainable cities at its center. In Oslo and Gothenburg different forms of congestion taxes has been introduced. Public transport will be fossil-free in the regions in the coming years and self-driving cars will be tested large scale in Gothenburg starting 2017. With increased connectivity Western Scandinavia have conditions and a will to be leading the way to more sustainable cities.
The maps below show where people live in the five administrative areas in West Sweden. Gothenburg is the metropolitan center for the surrounding and quite dense populated Gothenburg region. The map depicts a typical pattern for a major city. In the other parts of West Sweden the cities have fewer inhabitants and the surrounding areas are not that populated. In Fyrbo dal people are concentrated to the cities of Trollhättan, Uddevalla and Vänersborg with a total of 140,000 inhabitants and sometimes known as the three city region. In Borås the city itself is a compact center with a total of +100,000 inhabitants. In Halland people live at the coast with Halmstad as the main center with 100,000 people. In Skaraborg people in general live more spread out in smaller municipal centers and in the countryside. Skövde, with +50,000 inhabitants, is the center of this part of West Sweden that has a total population of 250,000.

POPULATION PER KM² IN WEST SWEDEN, NUMBER OF PEOPLE PER SQUARE KM

Note: The color of the bars depicts the density of that square kilometer area.
Source: www.grkom.se/toppmenyn/detrajobbargmed/miljosaamballsbbyggnad/statistikkartor/4.5ead95a14972bd5ae0b76cf.html

Seen in a 40 years perspective urban sprawl in West Sweden could be said to have come and gone. In the period 1975 to 1985 the commuter municipalities around Gothenburg had a fast and steady increase of its population while Gothenburg city population stayed constant. New houses where often built on arable land, sprawling out, and commuting, mostly by car, increased rapidly. This trend has been broken during
the last decades. The surrounding municipalities are still growing but the city of Gothenburg is now among the fastest growing municipalities also in relative terms.

The trend has been the same according where houses have been built in the other parts of West Sweden. The difference has been that some of the local regional centers: Borås, Halmstad, Skövde and Trollhättan/Uddevalla, has had stronger development over the whole period. The municipalities in Halland with a close connection to Gothenburg labor market has been growing strong over the whole period, as has Strömstad on the boarder to Norway. In the last decade and in general there is a correlation between the density of a city region and the increase in population. The denser the more population has increased. On labor market level, and looking at Sweden as a whole, there is a very strong correlation between the size of the labor market and the development of population.

As seen in the chapter about housing the coast is very attractive, with high prices on property and high returns on invested money. The development here is hampered by rules and regulations on where to build.44

If we study living patterns by attractiveness the map of where people with higher education lives is revealing. The percentage of people with higher education is very high in major city centers and along the coast. Here often exceeding half of the population. In smaller cities and at the countryside the share with higher education is often below ten percent. The exception is in areas of high natural beauty as on the mountains and by the lake Vänern in Skaraborg. The map shows a relatively segregated living pattern in West Sweden.

The planning system in Sweden has a planning “monopoly” for the municipalities at its base. This means that no change to the use of land can take place unless it is based on a municipal plan. Individual land-owners cannot build on their land if the building development is not in agreement with the municipal plans. With few exceptions the state cannot decide on the change of use of land if the decision would go against municipal plans. With only few exceptions, the municipalities have the right of veto in planning matters.

All municipalities must have a current comprehensive plan that covers the entire municipality. The Municipal comprehensive plan is not legally binding but is meant to form the basis of decisions on the use of land and water areas. The Detailed development plan is the legally binding instrument. It is the most important instrument for implementing the intentions of the comprehensive plan. It divides obligations and rights between the municipality and the land owners.

For the planning of matters concerning several municipalities the legislation appropriates the instrument of Regional plan. The municipalities concerned can make a joint demand to the Government that a

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44 See chapter on environment for more facts on land use
regional planning body should be appointed. From then, planning in a municipality that is a member of the regional planning body must agree with the regional planning pursued by that body. Currently, regional planning only exists in the Stockholm and Gothenburg areas.

The regional planning body in Gothenburg is the Gothenburg Region (GR), an association of 13 municipalities. The municipalities have agreed that development of the regional core is of essential importance for the development of the region as a whole, and that development will be based on a system of local public transport, preferably rail, with strong connection to the main corridors. The main corridors are seen as the spine of the region. The structural illustration seen in the figure at the left is the core document for the regional plan.45

In later years the question of the appropriate geographical level for planning has been more and more discussed. Without questioning the municipal monopoly, there is a widespread belief in the need of more coordinated planning on the regional level. In Västra Götaland there is now cooperation between the region and the municipalities in all four parts of the region to discuss how to develop. The Government has launched several committees on the question. One obvious reason being the regional responsibility for infrastructure planning and public transport.

Even if the planning system has seen to be working better in sustainable terms during the last decades than before that, there are of course a lot of challenges in the system for the future.

The main policy challenges related to land-use planning in West Sweden today are:

- Continue to build denser in the metropolitan area of Gothenburg and in the regional university cities outside Gothenburg
- Finding ways to integrate socially deprived areas in to the main parts of the cities in the region
- See to it that it becomes possible to build close to public transport (rail) in the corridors in the region
- Making it possible to use the most attractive parts of the region outside the bigger cities to enhance development in all parts without threatening environment values

45 http://www.grkom.se/toppmenyn/omgrgoteborgsregionen/inenglish.4.5f30b95110fd8ee51a8000187.html
Megaregion Western Scandinavia
The flaw in rail infrastructure has been the main reason behind the creation of cross-border organizations like the Scandinavian Arena and the Gothenburg/Oslo co-operation during the last 20 years. Based on a vision of the benefit for all parts of society with better connectivity, the strategy has been to push for the needed rail investments. The result so far is meager.

The development during the last decade means that the need for investments has increased dramatically. The transport of goods between the south and the north part of the megaregion has increased dramatically. The exchange inside the region has increased in economic terms and between people. The development is not sustainable in environmental, economic or social terms. Western Scandinavia undoubtedly and according to independent assessors has one of the largest potential for economic and sustainable development in Europe. Due to the neglected infrastructural development this potential is not taken advantage of for citizens or industry in Norway, Sweden and Denmark, or for the inhabitants and companies in the respective regions.

The main missing link is the one between Oslo and Gothenburg. The relation Oslo-Gothenburg is probably the one with the largest difference in travel time by train and car between two metropolitan city regions, where a rail connection exists, in Europe. On the West Coast Line from Malmö to Gothenburg single track passages needs to be made in to double tracks.

Rail investment is a key to better connectivity in all areas in Western Scandinavia. It will not only bring better accessibility but also a more efficient use of other resources like airports, etc.
The transport system inside West Sweden is essentially functioning well. In geographical terms West Sweden is an integrated region. In all municipalities except Gothenburg, Borås and Halmstad more than one out of five that work travel to another municipality for work. In half of the 55 municipalities the figure is four out of ten. Road infrastructure is in general of good standard but with congestion problems in and around Gothenburg, and with slow and less safe main roads on E20 through Skaraborg to Stockholm and on E45 to the northern parts of Sweden via Dalsland. International connectivity have improved in the last decade and is now at or above average European level in West Sweden both for the continent and for the rest of the world.

Rail infrastructure is more problematic. The “missing link” between Oslo and Gothenburg is the single largest barrier to increased connectivity between Sweden and Norway, and to sustainable transport of goods and people. Travel time is four hours by train from Gothenburg to Oslo on a stretch that by road is 290 km and by train 350 km. Single track dominate on large parts of the stretch and dense regional traffic close to the metropolitan centers leaves no room for more traffic. The latter is even more pronounced for the main connection between Gothenburg and Stockholm via Alingsås and Sköde. There are also impending needs of improved rail infrastructure Gothenburg via Halland to Malmö/Copenhagen and from Gothenburg via Landvetter Airport, Borås, Jönköping to Stockholm.

The Port of Gothenburg is the largest port in Scandinavia and the gateway to the world for a large proportion of Swedish industry. Almost 30 per cent of Swedish foreign trade passes through the port that has 130 direct services to destinations in Europe, Asia, the Middle East, Africa and North America.

The transport system

The map below shows the basic transport infrastructural system in West Sweden. There are five main corridors emanating from metropolitan Gothenburg. To the south, highway E6 and the West Coast Line railway (Västkustbanan) goes through all major municipalities in Halland and then on to Helsingborg, Malmö and Copenhagen. Västkustbanan still has some single track parts in Varberg and Helsingborg affecting travel time and accuracy. To the north E6 continues to Oslo. Bohusbana railway (single track) takes the same road but has its final station in Strömstad, close to the Norwegian border. To the northeast main road E45 links Gothenburg with Trollhättan and then on to Dalsland and the northern parts of Sweden. The railroad to Oslo (Norge/Vänerbanan) also passes Trollhättan and from there on via Dalsland and on single track (missing link) reaches Norway.

The main railway between Gothenburg and Stockholm is Western Main Line (Västra

46 Swedish transport administration
stambanan) with a travel time of approximately three hours stretching through Skaraborg and Skövde (1h) and supplemented by highway E20 that also has its final stop in Stockholm after almost 500 km.

The last corridor is the one from Gothenburg to Borás, Jönköping and Stockholm via highway 40/E4. Road conditions are quite good after investments during the last decades. Railroad on this stretch is slow or non-existent. Plans to build a high-speed train now seem to have become a bit less sure.

The port of Gothenburg is the largest port and the port of Brofjorden is the largest oil port in Sweden. Gothenburg-Landvetter airport is the second largest airport in Sweden.

**Commuting**

One fundamental role for the transport system is to make it possible to live in one place and work, study etc. in another. Commuting flows for work are large and growing in West Sweden. In over 50 percent of the municipalities more than one out of three that works travel to work in another municipality (middle figure). In more than one out of three municipalities the increase of this figure is more than 20 percent the last ten years (figure to the right). The figure at the left shows the share of jobs held by commuters per municipality. Having one of the three darkest colors in this figure means that at least 25 percent of all jobs in the municipality is held by people commuting in from other places.

The map below shows the actual commuting flows inside West Sweden. The metropolitan center of Gothenburg is clearly visible as is its strong links to Borås and Halland down to Halmstad. Halland is characterized by a pearl string pattern with the majority of people living in cities at the coast, connected via road and rail. For the other parts of West Sweden there is a more standard multi-core pattern where Trollhättan/Vänersborg (north), Skövde (east) and Borås (center) are the regional centers for the surrounding area. In addition to the domestic commuters, approximately 9 000 people in West Sweden commute to Norway.
The following table shows the ten largest commuting relations in West Sweden. The largest commuting relations within Halland is from Laholm to Halmstad with 2,360 commuters.

### TEN LARGEST COMMUTING RELATIONS IN WEST SWEDEN

<table>
<thead>
<tr>
<th>Living municipality</th>
<th>Working municipality</th>
<th>Commuters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mölndal</td>
<td>Gothenburg</td>
<td>16150</td>
</tr>
<tr>
<td>Gothenburg</td>
<td>Mölndal</td>
<td>14811</td>
</tr>
<tr>
<td>Kungsbacka</td>
<td>Gothenburg</td>
<td>13574</td>
</tr>
<tr>
<td>Partille</td>
<td>Gothenburg</td>
<td>10254</td>
</tr>
<tr>
<td>Lerum</td>
<td>Gothenburg</td>
<td>9104</td>
</tr>
<tr>
<td>Kungälv</td>
<td>Gothenburg</td>
<td>8341</td>
</tr>
<tr>
<td>Härryda</td>
<td>Gothenburg</td>
<td>8262</td>
</tr>
<tr>
<td>Äle</td>
<td>Gothenburg</td>
<td>6395</td>
</tr>
<tr>
<td>Vänersborg</td>
<td>Trollhättan</td>
<td>4336</td>
</tr>
<tr>
<td>Gothenburg</td>
<td>Partille</td>
<td>3763</td>
</tr>
</tbody>
</table>

Source: SCB

**Commuting between counties in the Swedish part of the Megaregion**

More than 95 percent of the inhabitants in Skåne and Västra Götaland that works, live and work inside the respective region. For Halland the corresponding figure is eight out of ten and the large commuter flow goes to Västra Götaland and the Gothenburg metropolitan city region. 24,000 people living in Halland commute to Västra Götaland for work. This is almost 10,000 more commuters than over the Öresund Bridge between Skåne and Denmark. 9,000 people commute from Västra Götaland to Halland. The development the last ten years is in line with the structure for 2015. In total there is no real labor market integration between West Sweden and Skåne. Halmstad in the south of Halland, with 100,000 inhabitants, is a strong regional center by itself, and 60 percent of the population in Halland lives in the three municipalities closest to the border of Västra Götaland. These municipalities are also a part of the Gothenburg labor market as defined by Statistics Sweden.
Travel time and proximity to jobs and highly educated people

The average distance travelling to work and school in Sweden is 23 km. Average travel distance for work for commuters to and from the Gothenburg metropolitan area is 51 km which, also in average, takes 50 minutes. Within Gothenburg commuters travel 12 km in 24 minutes\(^{47}\). In Västra Götaland 72 percent of the residents have less than 45 minutes with public transport to their nearest hub (Gothenburg, Borås, Skövde, Trollhättan, Uddevalla or Vänersborg). Travelling by car, 96 percent have less than 45 minutes\(^{48}\).

The figure below shows that more than 400,000 workplaces can be reached with a 30 minutes’ drive in most of the Gothenburg labor market region. With 60 minutes that applies to a much larger area, with over a million inhabitants that can reach more than 400,000 workplaces. The map to the right show how many highly educated people a “workplace” can reach from a certain location. Within the Gothenburg labor market workplaces can reach more than 150,000 highly educated people\(^{49}\). Outside the Gothenburg region and Borås it is more common to reach between 10,000 and 50,000.

ACCESSIBILITY TO WORK AND LABOR WITH CAR

\[\text{WORKPLACES WITHIN 30 MIN BY CAR} \quad \text{HIGHLY EDUCATED PEOPLE WITHIN 45 MIN BY CAR}\]

Source: Tillgänglighetsatlas över Västra Götaland (Västra Götalandsregionen)

Note: Halland was not part of the analysis made. If it would have been the probable result is that the orange color in the left picture would continue for quite a while down in to Kungsbacka (a part of Gothenburg Labor Market) and that there would be an outstrecth of yellow color (as around Trollhättan, Borås and Skövde) all the way down the coast to Halmstad. The figure on the right would not change much except for including Kungsbacka in the area where you would reach more than 150,000 highly educated people in 45 minutes.

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\(^{47}\) Arbetspendling i storstadsregioner – en nulägesanalys, Trafikanalyss 2011:3

\(^{48}\)Uppföljning regionalt trafikförsörjningsprogram 2015, Västra Götalandsregionen. Figures missing for Halland.

\(^{49}\) At least or more than 3 years of university education
How we travel

Six out of ten travels in West Sweden is made by car, one out of ten by public transport. The figures are in line with the Swedish average. The metropolitan area of Gothenburg has, as expected, a higher share of public transport and lower share of car transport than both West Sweden and Sweden.

MODAL SHARE

The market share of public transport compared to other ways of travelling “using an engine” is 25 percent. There is a big difference between Västra Götaland and Halland but it is mainly because of the Gothenburg area. In Västra Götaland outside the Gothenburg region public transport has similar market shares as Halland. The market share of public transport has increased quite fast the last six years. One of the explanations to this is better rail connections between Vänarporsborg/Trollhättan and Gothenburg and on the stretch between Halland and Gothenburg.

MARKET SHARE OF PUBLIC TRANSPORT

That local and regional planning and infrastructural development is crucial for a sustainable society and for sustainable travel becomes clear when studying car ownership in West Sweden. Car ownership is increasing over time. Halland has more cars per person than Västra Götaland and Sweden and car ownership is increasing faster in Halland. 50 But the big differences are to be found between municipalities with different density and planning. In Gothenburg there are 262 car ownerships per 1000 inhabitants. In Tjörn the corresponding figure is 506. Tjörn could be described as an island community with rural sprawl.

50 Statistics Sweden
### CARS PER 1000 INHABITANTS

<table>
<thead>
<tr>
<th>Region</th>
<th>2002</th>
<th>2005</th>
<th>2010</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Halland</td>
<td>409</td>
<td>416</td>
<td>417</td>
<td>433</td>
</tr>
<tr>
<td>Västra Götaland</td>
<td>360</td>
<td>366</td>
<td>366</td>
<td>372</td>
</tr>
<tr>
<td>Sweden</td>
<td>364</td>
<td>367</td>
<td>366</td>
<td>373</td>
</tr>
</tbody>
</table>

Source: Sweden statistics

### Public transport

The number of trips made by public transport has increased with around 8 percent from 2012 to 2015. Since 1999 the number of trips with regional trains in West Sweden has tripled. Half of the trips in the public transport system are made with bus, 40 percent with trams, 6 percent with train and the rest with boat. In Halland almost four out of ten travels with public transport is made by train. The majority of the inhabitants live on a pearl string along the coast making train travel the best alternative.

Trips with train are on average longer than trips with bus. Train travel is in general more important for regional enlargement and matching in the labor market. As a result of the geographical structure, vehicle kilometer per capita is high in Västra Götaland while in Halland there is more passenger kilometer per capita.

### NUMBER OF TRIPS (IN MILLIONS)

<table>
<thead>
<tr>
<th>Region</th>
<th>2012</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Halland</td>
<td>15,7</td>
<td>16,8</td>
</tr>
<tr>
<td>Västra Götaland</td>
<td>259,3</td>
<td>280,1</td>
</tr>
</tbody>
</table>

Source: Local and regional public transport, Trafikanalys

The number of trips on public transport normally peaks between 7 and 8 in the mornings. In the afternoon there is generally a more widespread and lower peak time between 2:30 and 5:30. The main public transport stops are concentrated to the cities and the train stations, like Gothenburg central station, Brunnsparken, Korsvägen, Södra torget in Borås, Uddevalla, Trollhättan, Halmstad and Skövde.

### Long distance and commercial public transport

Several commercial bus companies offer service through the megaregion Copenhagen-Malmø-Gothenburg-Oslo. The Norwegian NSB run trains between Oslo and Gothenburg, four times a day that takes around 4 hours. In order to increase the market share on train between Oslo and Gothenburg travel time need to be reduced to at least 3 hours\(^{51}\). Today, travel time with bus is shorter Gothenburg-Oslo compared to travel by train. In Västra Götaland there are several commercial trains on the Western Main Line between Stockholm and Gothenburg. There are also a number of commercial bus lines.

Öresundståg is a train system in south Sweden and Denmark. Trains run between Gothenburg and Lund/Malmö at least every hour. Öresundståg is owned by the public transport companies in Blekinge, Halland, Kronoberg, Kalmar, Skåne, Västra Götaland and the Danish transport and construction agency. SJ also run a train every second hour with fast trains and shorter travel times.

### Public transport strategies\(^{52}\)

In Västra Götaland there is a prioritized network with six commuter hubs in the region and six outside. The goal is to have at least 10 travel possibilities by 2035 in all parts of the network. It is also a goal that the travel time ratio with train should be 20 percent faster than with car and no more than 30 percent longer with bus. In Halland the public transport services are mostly concentrated in urban areas along the

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\(^{51}\) [http://www.jernbaneverket.no/globalassets/utredningen-oslo-goteborg---hovedrapport.pdf](http://www.jernbaneverket.no/globalassets/utredningen-oslo-goteborg---hovedrapport.pdf)

\(^{52}\) Regionala trafikförsörjningsprogrammen in Västra Götaland and Halland
coast. In the west-east direction it is more limited, except to Ullared and Hyltebruk that are supported by an extensive bus service.

Only one percent in Västra Götaland has no access to public transport at all. Nine out of ten residents have less than 1.5 kilometer to a public transport stop that have at least 10 possible journeys a day\textsuperscript{53}. In rural areas, public transport mainly consists of smaller regional bus lines for school pupils. The service is linked to morning and afternoon, other times it is limited. In 2017 all school buses in Halland will be open for everyone to ride. In areas in West Sweden where there is no scheduled public transport there is a demand responsive very cheap taxi transport with travel possibilities on certain hours on weekdays, called Närtrafik. People living in rural areas with more than 1 km to a bus stop have Närtrafik as an option. By the end of 2016 all municipalities in Västra Götaland will have Närtrafik. In Halland all municipalities already have Närtrafik.\textsuperscript{54}

**MAIN PUBLIC TRANSPORT NETWORK**

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**Congestion**

There are congestion and queues of traffic in peak hours to and from Gothenburg from all directions. There is a system of congestion taxes that applies to vehicles. The number of cars at the pay stations has decreased with 6 to 7 percent since the taxes were introduced\textsuperscript{55}. Congestion in the Gothenburg area affects travel to and from Halland and a large part of Västra Götaland. In other larger cities in West Sweden there are only moderate congestion problems.

On the railway, congestion is a more general problem. The service of regional and local trains is at maximum capacity in most part of the system. The Western main line is the main railway between Stockholm and Gothenburg. The line is run by many different types of service and trains which makes it extra vulnerable for disturbances. In parts of the system where there is only single-track, like the missing link between Sweden and Norway and in Helsingborg, the vulnerability is high.

**Global and continental accessibility**

Global and continental accessibility is a question of growing importance. For West Sweden the reasons are the global companies in the region, international tourism and a strong urge among people to travel. For the younger generation studies in West Sweden shows that travel abroad is a very important aspect of their life, something they don’t want to give up on easily. Accessibility is somewhat under the European

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\textsuperscript{53} Landsbygdsutredningen 2014 The figures for Halland is not available.

\textsuperscript{54} Regionalt trafikförsörjningsprogram, Halland

\textsuperscript{55} Uppföljning av bil och kollektivtrafik, Västsvenska paketet 2016
average for the continent and a bit over for global travel. Faster connection to Copenhagen would increase these figures quite dramatically. The situation has clearly become better during the last decade. With the Hallandsås tunnel and other investments in the West Coast Link. Travel to Copenhagen is at least 15 minutes faster and Landvetter airport have introduced a number of new connections.

GLOBAL AND CONTINENTAL ACCESSIBILITY

Landvetter airport now have over 80 destinations, mostly within Europe. There are flights to about 10 other destinations in Sweden and another 20 in northern Europe. In addition there are several charter destinations in and outside of Europe. Example of cities abroad with frequent connections are Copenhagen, London, Frankfurt, Oslo, Helsingfors, Berlin, Amsterdam and Bryssel 56. Ferry passenger service run both from Varberg to Denmark (178 000 passengers), Gothenburg to Denmark/ Germany with 1.6 million passengers per year and between Strömstad and Sandefjord in Norway with 1.3 million passengers.

Broadband

Broadband accessibility is essential in order to attain policy objectives in several areas of society. The goal is that 90 percent of all households and businesses should have access to broadband at a minimum speed of 100 Mbps in 2020. Government subsidizes the development of the network but the broadband and services are provided by market actors. In West Sweden all households have access to wireless broadband and a little more than half have access to fiber. In Västra Götaland 66 percent have access to 100 Mb/s, in Halland 56 percent. There are large differences between the municipalities as shown in the map to the right.

SHARE OF HOUSEHOLDS WITH ACCESS TO BROADBAND IN YR 2015

<table>
<thead>
<tr>
<th>Region</th>
<th>Fiber</th>
<th>4G</th>
<th>30 Mb/s</th>
<th>100 Mb/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Halland</td>
<td>54 %</td>
<td>100 %</td>
<td>90 %</td>
<td>66 %</td>
</tr>
<tr>
<td>Västra Götaland</td>
<td>52 %</td>
<td>100 %</td>
<td>88 %</td>
<td>56 %</td>
</tr>
<tr>
<td>West Sweden</td>
<td>21996</td>
<td>24796</td>
<td>26085</td>
<td>25790</td>
</tr>
</tbody>
</table>

56 Swedavia
Transport of goods

West Sweden is a natural logistic centre for goods mainly due to the port of Gothenburg and the roads and railroads that link the continent via Denmark to Norway. 630 million tons of goods were transported in Sweden in 2014. Almost 70 percent of this was domestic goods, mostly carried on road. In West Sweden 60 percent of goods are transported on road, a volume including goods in transit to the nearest port. Sea transport is second after road transport in West Sweden.

Road and railway routes through West Sweden make up the transport corridors for both Swedish and Norwegian foreign trade and transit goods to and from Norway are increasing. The number of heavy trucks crossing the border on the Svinö bridge has increased by 40 percent in the last ten years. Transit traffic on highway E6 south of Gothenburg is over 30 percent of the heavy traffic. North of Gothenburg it is over 50 percent. Freight transported on the roads E6, E45, E20 and road 26, 40 and 41 accounts for a large proportion of the total volume. Roads inwards Sweden is used mainly for goods to and from West Sweden. Of all goods carried by Swedish trucks 26 percent is unloaded and 28 percent loaded in West Sweden.

The port of Gothenburg with several direct services to other continents plays an important role for the development of Swedish trade. One quarter of all Swedish foreign trade goes through the port. The port has 130 direct lines to destinations all over the world. 60 percent of all container traffic in Sweden (867 000 TEU) pass through Gothenburg harbour. Goods on railway to the port have increased but there is a need for increased investment in rail infrastructure to expand this further. The combination of ship and rail is efficient from both an environmental and economic perspective. The Port of Gothenburg has high ambitions and is a leading actor when it comes to sustainable transport.

Gothenburg-Landvetter Airport is an important player when it comes to premium goods linked to international destinations. Total goods in Sweden by air were 123 000 ton in 2014. Arlanda in Stockholm carried 58 percent of this and Gothenburg-Landvetter 21 percent.

REMAINING BOTTLENECKS IN FREIGHT TRAFFIC 2030 BASED ON CURRENT PLANS

57 Trafikanalys
58 Godstranspstrategi (2016), Västra Götalandsregionen
59 www.portofgothenburg.com
60 The Scandinavian 8 Million City, COINCO II Gränsvörskridande godstransporter på järnväg Oslo–Göteborg–Köpenhamn–Hamburg – Utmaningar och möjligheter – English summary
Region Västra Götaland has taken forward a strategy for goods where a number of shortcomings regarding freight flows are identified.61

- A high proportion of road transport, in particular on the E6 and Road 40,
- Low share of rail transport regarding certain routes; underdeveloped rail traffic to/from Norway and towards southern Sweden and the continent,
- Low proportion of short sea shipping,
- Poor conditions for intermodal transport structure (terminals and rail connections),
- Poor capacity, robustness and general congestion in infrastructure in the Gothenburg region regarding road and rail and a potential conflict with urban development,
- Insufficient capacity and functionality in the rail system.

Connections and gaps
The goal of Swedish transport and infrastructure is to ensure the economic efficiency and long-term sustainability of transport provision for citizens and enterprise. In addition there is a functional goal of a basic level of accessibility and a consideration goal of safety, environment and health.

Gaps are identified in the infrastructure planning process which is starting in 2016 for the next period. The main road system has a lack of capacity around cities and there is also a general lack of maintenance in the road system. Both national roads and several regional roads need investments. In the national system E20 from Gothenburg via Skaraborg to Stockholm has a low standard and is unsafe in parts of Skaraborg. In the regional road system there are often a lack of safety measures.

The railroad system has more general and larger problems and has great need for both investments and maintenance.

- The railroad between Gothenburg and Oslo have a single-track line between Öxnered in Sweden and Halden in Norway, called the missing link.
- The West Coast Line has two single-track sections at Helsingborg and Varberg that causes bottlenecks and delays in the system.
- There are a lack of capacity at the stations of Halmstad and Kungsbacka.
- Maintenance in the regional railroads system has been neglected for many years in the national plan. For example the railroad Halmstad-Värnamo-Nässjö is non-electrified and has a low standard. Viskadalsbanan/ Älvsborgsbanan and Bohusbanan have low standard, Kinnekullebanan is non-electrified etc.
- A new high speed railroad between Stockholm and Gothenburg could meet the need for sustainable long-distance travel and link Jönköping to West Sweden in a more sustainable way
- The Gothenburg Port Line is currently a single-track line. To handle the demand for increased capacity it needs to be expanded to a double-track line.
- Gothenburg station reached its capacity roof a long time ago.
- The port of Gothenburg needs dredging in order to maintain and develop their service. Also it is a lack of rail infrastructure to the port.
- The locks of the canal in Trollhättan need investment to secure the transport to and from lake Vänern.

In West Sweden Gothenburg-Landvetter airport is the largest for both passenger traffic and freight traffic. There are two other regional airports. Halmstad airport has charter destinations and service to Stockholm. Trollhättan-Vänersborg airport, is a minor regional airport with service to Stockholm.

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61 Godstransportstrategi (2016), Västra Götalandsregionen
Planned and completed infrastructural investments in West Sweden

The West Link\(^{62}\) is an eight kilometer long double track railway, including a six kilometer railway tunnel underneath central Gothenburg with three new stations. The project aim is to increase capacity for commuter services, improve access to the city and reduce the vulnerability of the rail system. The labor market will expand, which is a prerequisite for regional growth with a constant growth of population. The cost is calculated to 20 billion SEK at 2009 price level, half state funding and half regional and local funding. For more information view the following videos:

- [https://youtu.be/lksHqkMiy8Q?list=PL0D26CCF30BCFA619](https://youtu.be/lksHqkMiy8Q?list=PL0D26CCF30BCFA619) (West Swedish agreement)
- [https://youtu.be/r7P4PO5jG8I?list=PL0C23461A63FCE6D5F](https://youtu.be/r7P4PO5jG8I?list=PL0C23461A63FCE6D5F) (West Swedish agreement)
- [https://youtu.be/V6hgFrntGrGc?list=PL0D26CCF30BCFA619](https://youtu.be/V6hgFrntGrGc?list=PL0D26CCF30BCFA619) (West Swedish agreement)
- [https://youtu.be/fScV3mymDcA](https://youtu.be/fScV3mymDcA) (Congestion taxes)

The Marieholm Connection includes among other things a tunnel and a railway bridge across the Göta Älv in the center of Gothenburg. One goal is to improve communications between the Port of Gothenburg and the industries on Hisingen, including Volvo Cars and Volvo Trucks. The bridge is financed by state, regional and local funds, Volvo and the port of Gothenburg as well as co-financed by the EU (TEN-T). For more information view the following video:


The Gothenburg-Borås rail project is a 60 kilometer long double-track railway for high speed trains and fast regional trains. The new railway should connect the Gothenburg-Landvetter airport with a new station underneath the airport. Start of construction is 2020. For more information view the following video:

- [http://youtu.be/3McZG7ZtbpA](http://youtu.be/3McZG7ZtbpA)

The expansion of the railway through Varberg is one key link left to complete the West Coast line. There will be 7.5 kilometers of new double track with a tunnel. The new track will increase the technical standard of the entire West Coast Line, reduce travel time and provide greater reliability. The port of Varberg will move when the new double track will be built. The Hallandsås tunnel was opened 2015 and is a two parallel railway tunnels through the ridge.

E20 connects Stockholm with West Sweden and is significant for transport of goods as well as local and regional travel. There are still 80 kilometers of two-lane road left to transform in to four lanes. E6 is the main transport route north to south through West Sweden and is of great importance for heavy traffic to the ports and as transit. E6 suffers from congestion problems in and around Gothenburg. For E45 and 40 separation of lanes with fences is planned.

Recent (and planned in the near future) investment in public transport infrastructure\(^{63}\)

- Gamlestaden bus and rail station,
- Äsa and Hede rail stations (Kungsbacka),
- Public transport hubs in Gothenburg (Amhult, Angered and Skeppshbron (also for ferry)), Kungälv, Lerum and Landvetter.
- New public transport bus terminal in Halmstad,
- Improvement of bus terminal in Skövde and Trollhättan,
- Park and ride for cars and bicycles along public transport corridors.

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\(^{62}\) part of the West Swedish agreement  
\(^{63}\) Västrafik and Hallandstrafik
The infrastructure planning process – Challenges and objectives in West Sweden

West Sweden priority is a sustainable and accessible transport system, both for residents and businesses. Residents need access to work, study, services, culture, nature etc. and companies need to secure their logistic and other needs. The population in West Sweden is growing which so far have increased the need for mobility. In addition, household disposable income is expected to continue to increase which so far have been a strong driver of transport demand. Labour market integration in West Sweden is also growing quite fast producing more jobs and higher productivity and of course, per se, increasing demand for mobility.

West Sweden as a transport region offers great opportunities but is vulnerable. The need of maintenance and investments are still high in an area missing some basic parts of transport infrastructure for a metropolitan region. Several trends like digitization, electrification and urbanization will have a large impact on transport development and will put a pressure on more forward looking investment plans in the future.

Objectives

Region Västra Götaland
The regional plan for investments in infrastructure has its base in Vision Västra Götaland – A Good Life and the strategic plan for regional development, Västra Götaland 2020 (VG2020). The goal is to increase economic growth at the same time reducing the impact of transport on climate and the environment in general. There is also a goal to adjust the transport system for the need of all social groups. The strategic direction for public transport is to build where the potential for increased number of passengers are highest at the same time providing a basic public service in the region as a whole. In addition there are plans for an expansion of the regional train system. In Region Västra Götaland there is an objective to double the number of travels with the public transport system between 2006 and 2025. It would mean a market share of approx. 33 percent. There is also an objective to decrease carbon dioxide per kilometre travelled with public transport by 80 percent from 2006 to 2020.

Region Halland
In Halland the vision is "The best place to live". The regional plan for investments in infrastructure has a goal to increase accessibility both for people and businesses. Another goal is to increase the number of trips with public transport. Investments are prioritized in public transport, in the West Coast Railway and in nodes for interchanges. In Region Halland the ambition is that the public transport system will be run by 100% non-fossil fuel in 2020.

Infrastructural planning
The Swedish Transport Administration is responsible for long-term planning of the transport system, building, operating and maintaining of public roads and railways. The Transport Administration prepares a draft of the national plan for transport infrastructure. The government decides the plan. The regions decide on the regional transport infrastructure plan, but the government decides the funding.

Before the formal planning process a compulsory investigation, an action-choice study (or similar studies) should be made. An action-choice study is a method for the early stages of investigating via the so called four step principle and to guarantee a dialogue with the stakeholders. The purpose is to identify effective measures in different time frames. Other actors in the planning process are regions, municipalities, the provincial government, businesses and organizations.

Organization and planning process for local and regional public transport
In 2012, a new law for public transport was adopted in Sweden. The purpose of the law was to open up the public transport market to competition and to strengthen the political influence over public transport.
A public transport authority was established at the regional level in each county. The municipalities have transferred the responsibility and tax equalization took place in 2012.

Approximately half of the cost of public transport is financed by the customers and the other half with taxes. In 2015 in Västra Götaland the additional funds from tax money were 4 billion SEK (total cost of 7.6 billion SEK), and in Halland 340 million SEK (total cost of 850 million SEK). In addition, the public transport system is also funded by the Swedish transport administrations and the municipalities in their role as road authority for the public transport stops, bus lanes and other infrastructure measures. The municipalities can and often do fund an increase of the service level of public transport in their area.

The regional transport provision programs with long-term goals and other strategic decisions are made by the regions. They also decide on the public service obligations, the transport for which they intend to be responsible and which they guarantee to maintain. The programs are developed in consultation with a broad range of actors. All types of transport operators, including the commercial players, will have to submit information on the range of services they offer.

The public transport authorities are responsible for the provision of public transport, but the mandate to do so has been given to the public transport companies Hallandstrafik and Västrafik respectively. Agreements with private public transport companies are made to run the services. The agreement can be very different. Some include a high amount of incentives connected to number of trips and/or the level of satisfaction.

There are several political bodies that make decisions about the public transport system. In Region Västra Götaland there is a committee of public transport. In Halland it is part of the regional development committee. The public transport companies also have a board of politicians. Strategic decisions are the responsibility of the regional council. Other more detailed decisions are the responsibility of the public transport company.

**Agreements of investments in West Sweden**

In Sweden there are several examples of agreements of financing when it comes to infrastructural investment between the state and the regional and local level. The latest example is the national negotiation on housing and infrastructure, described below.

**West Swedish agreement**

The West Swedish agreement includes investments in public transport, rail and road. The cost is calculated to 34 billion SEK at 2009 price level, half from state funding and the other half from the congestion tax in Gothenburg as well as from local and regional funding. In total 55 km of new bus lanes will be added. Commuter trains have been ordered and platforms are being lengthened, which will increase capacity. Bicycle paths, bicycle parking, commuter car parks are all being built and extended. Major investments are also a part of the agreement like the West link, a new bridge and a new tunnel for Göta Älv.

**Urban agreement**

Local governments can apply for funding to promote sustainable urban environments, in order to increase the market share of public transport, so-called urban agreement. The total fund is two billion SEK during the period 2015-2018. Borås, Gothenburg, Kungälv, Trollhättan and Kungsbacka in West Sweden have got funding. The government share is 50 percent in a total cost of approximately 1,2 billion. Support should especially promote innovative, capacity building and resource-efficient solutions for public transport. Preconditions for support are contribution to sustainable mobility and house building.

**The national negotiation on housing and infrastructure**

The negotiation, appointed by the Government, is about a railway network Stockholm – Gothenburg and Stockholm - Malmö. It includes co-funding principles (has no funding today), a development strategy, and
route and station options in and around towns and cities. The focus is on generating the maximum benefits, including increased housing construction and an improved labour market. Another important aspect of the mandate is to increase public transport, improve accessibility and increase housing construction (approximately 100,000 new homes) in the three metropolitan areas of Stockholm, Gothenburg and Malmö. It is also to further investigate a permanent link between Sweden and Denmark. The main challenge in West Sweden is to satisfy the need for both regional and national trains between Gothenburg and Borås.

A reference list to this chapter can be found in Appendix 4.
Culture and experiences

Megaregion Western Scandinavia
Western Scandinavia is an attractive region with an active cultural life, high participation in society and with a common focus on life quality, experiences and events. The tourism industry is growing fast in the region in absolute figures, in jobs and in relation to the respective development in Norway, Sweden and Denmark.

Culture and events can and should be seen as a gateway to closer cooperation and better connectivity between the regions and cities inside Western Scandinavia.
West Sweden is a region of culture and experiences. Participation in cultural activities and civil society is essential for social cohesion and democratic development and participation is high on a stable level in West Sweden. Digitalisation offers new possibilities to broaden participation and the boundaries between culture production and consumption are dissolving. More people are exposed to new impressions and expressions and this generates new ideas and thus stimulates innovative thinking. However, digitalisation may also lead to uniformity through so called filter bubbles. Prominent cultural institutions, popular tourist destinations, cultural and sports events contribute to the attractiveness of West Sweden as a region to live, to work or to visit.

Participation in civil society and cultural activities

The Swedes’ participation in in civil society and cultural activities has historically been high and stable compared to other countries. According to the SOM Institute, 83 percent of the population in West Sweden are members of some kind of association in 2014. There is a myriad of non-profit organisations where people meet to share and develop their mutual interests in sports, culture, nature, language, society or politics.

The level of participation in cultural activities has not changed much over time. As the figure below shows, reading books, visiting cinemas and museums are by far the most popular cultural activities. Women are slightly more active in culture then men. (SOM-Institutet, 2015).

Source: SOM Institute, University of Gothenburg
Creative fields of power

In order to further explore the significance of active cultural participation for the economy, the Regions of Västra Götaland and Halland conducted the research project “Creative fields of power”. It is based on cultural economist Pier Luigi Sacco’s theory that boundaries between culture production and culture consumption are dissolving. Since people as active participants become both consumers and producers, they strengthen community affiliations, enhance their creative competences and develop a willingness to learn, which all fertilizes the soil for innovation. As a result, culture’s new role can be described as a platform for pre-innovation.

Over 20,000 cultural activities and venues are geographically mapped and through self-learning algorithms connected to available social-economic statistics. The main conclusion is that the sub-regions do not fully utilize culture to stimulate an innovation-driven economic growth. (Västra Götalandsregionen, 2016).

Regional cultural institutions are centres for creative actions

There are several cultural institutions in West Sweden and two strategic areas in politics are widening participation and promote innovation.

The Gothenburg Opera and the Swedish Red Cross have established an international choir with people from 19 countries, of whom many are refugees. During Side by Side by El Sistema in Gothenburg, thousands of young people from all over the world meet to rehearse, socialise and perform a grand finale concert with musicians from the Gothenburg Symphony – the National Orchestra of Sweden.

Furthermore, Västra Götaland has many film facilities and locations and Film Väst is the main film fund and an internationally recognized partner in co-productions. The Halland Museum of Cultural History and the Mjellby Art Museum attract many visitors every year. The table below shows growth of the amount of visitors (and the share of children) to 15 museum organisations and 12 institutions of performing arts, all financially supported by Region Västra Götaland or Halland.

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Museum</td>
<td>2 270 700</td>
<td>528 200</td>
<td>23%</td>
<td>2 316 150</td>
<td>566 200</td>
<td>24%</td>
</tr>
<tr>
<td>Performing Arts</td>
<td>805 400</td>
<td>219 840</td>
<td>27%</td>
<td>906 563</td>
<td>256 000</td>
<td>28%</td>
</tr>
<tr>
<td>Total</td>
<td>3 076 100</td>
<td>748 040</td>
<td>24%</td>
<td>3 222 713</td>
<td>822 200</td>
<td>26%</td>
</tr>
</tbody>
</table>

Source: Kulturdatabasen and annual reports from the Cultural Affairs Committees of Region Västra Götaland and Gothenburg City.

Cultural institutions generates greater value than their costs

Two studies about the Nordic Watercolour Museum (2010) and the concert hall in Vara (2008) by Armbrecht and Andersson emphasise that the institutions generate a greater value for the society than their actual costs. Visitors as well as inhabitants of West Sweden show great appreciation for their visit and/or the existence of the institutions and a willingness to pay more than they did. The studies also show the impact on tourism (Armbrecht & Andersson, Varas värde varar - en studie om värdet av Vara konserthus, 2008) (Armbrecht & Andersson, 2010).

64 Uddevalla, Vänernsorg, Trollhättan and the triangle Skara-Skövde-Falköping have the best conditions though. Especially outside the bigger Gothenburgregionen, the cultural sector is geographically fragmented, not well integrated in the economy and sub-regional development is still based on traditional male-dominant manufacturing industries and agriculture. In the municipalities adjacent to Gothenburg, some cultural activities are more connected to creative industries, higher education, science and innovation. (Västra Götalandsregionen, 2016).
Cultural- and sport experiences in West Sweden

Destinations to visit in West Sweden include castles, museums, animal parks, amusement parks and varied nature with sea, lakes, cliffs and forests.

There are art museums in many cities, for examples in Gothenburg, Halmstad, Tjörn and Skövde. Moreover, there is a textile museum in Borås, glassworks in Limmared and Forsviks Bruk, one of Sweden’s oldest industrial heritage sites in Karlsborg. Grimeton Radio Station in Varberg and the rock carvings in Tanum are UNESCO World Heritage Sites.

Throughout West Sweden, there are castles and fortresses, for example Läckö Castle, Skottors Castle and Tjolöholms Castle. The fortresses in Bohus, Karlsborg, Marstrand and Varberg were once built for protection and now teach us about the history of West Sweden.

There are several amusement parks and zoos: Liseberg in Gothenburg, Skara Sommarland, Nordens Ark Zoo and Borås Zoo. Gekås in Ullared is Scandinavia’s biggest department store and one of Sweden’s most popular shopping destinations (Websites of the Tourist Boards in Halland and Västra Götaland).

The figure below shows that there are many destinations to visit in West Sweden.

Source: Report by HUI Research about cultural tourism in Västra Götaland and additional information from Region Halland: (Angel, Börjesson, & Rokotova, 2013)

There are several major cultural events in the region:

- **Gothenburg Book Fair**, each year in September, is a meeting place for the book trade and Europe’s second largest book fair with around 100,000 visitors.
- **The Gothenburg Film Festival** in February is the largest film festival of the Nordic countries with 30,000 visitors in 2016 who were offered 450 films from 84 countries.
- **Gothenburg’s Culture Festival** is a free six-day festival in August with around 1.5 million visits in 2016.
- **Hammarskullens carnival** in May is the largest carnival in Sweden and attracted around 75,000 visits in 2015 to Gothenburg’s suburb.
- **Way out West** is a three-day festival with pop music and art in August. It is held in Slottskogen City Park and attracted around 33,000 visitors a day in 2016. Artists who have performed during the 10 years of Way Out West include Alicia Keys, Wilco, Beck, Kanye West, Kraftwerk, Morrissey, Patti Smith, PJ Harvey, Prince and countless stars from West Sweden such as Laleh and the greatest of them all, Håkan Hellström.
- **West Pride** is a gay, lesbian, bisexual and transgender cultural festival in June with 127,000 visits in 2016.
Other performing arts festivals in West Sweden are Aurora Music in Vänersborg, Valle Baroque and Old Ox in Skaraborg, the International Street Theatre Festival and Change Music Festival in Halland.

Furthermore, Gothenburg was declared Sweden’s best sports city by the Swedish public service in 2016. Examples of annual major sports events in West Sweden are:

- **Gothenburg Horse Show** in February with World Cup Jumping in Scandinavium. The second largest horse fair in the world, Euro Horse Exhibition, is held at the Swedish Exhibition and Congress Centre at the same time.
- **Göteborgsvart** in May is the world’s largest half marathon with 64 000 runners and around 200 000 spectators.
- **Partille Cup** in July is the world’s largest handball tournament for young people with 1023 teams from 41 nations and the Opening Ceremony attracted 13 900 spectators to Scandinavia in 2014.
- **Gothia Cup** in July is the world’s largest soccer tournament for young people with 1661 teams from 80 nations and attracted 62 000 visitors in 2016.
- **Stena Match Cup** in July in Marstrand is a world class sailing event which attract 100 000 visitors.
- **Dalsland's Canoe Marathon** in August is the biggest canoe event in Scandinavia with participants from 19 countries in 2015.

Scandinavia's largest amusement park, Liseberg in Gothenburg, offers several events and concerts and attracted 3,1 million visits in 2015. The big arenas Ullevi, Old Ullevi and Scandinavium in Gothenburg, attract approximately 1,2 million visits every year to cultural and sports events.

Every year around 1,8 million people visit the Swedish Exhibition and Congress Centre in Gothenburg. Here you will find Scandinavia's widest range of exhibitions. Some of them are open to the public, others are industry-specific trade fairs.

**The tourism sector in West Sweden**

The cultural infrastructure is one of several factors having a positive effect on the development of the tourism sector. The number of overnights in West Sweden reached a total of 12,4 million in 2015 (including camping), which is an increase of 6 % since 2014 and 23 % since 2008. The figure below shows that the number of nights per capita is highest in Halland, compared to Skåne, Stockholm, and Västra Götaland.

![Nights per capita in 2014](chart.png)

Source: Statistics Sweden and Swedish Agency for Economic and Regional Growth, retrieved from Fakta Västra Götaland.

West Sweden is a popular destination for foreign tourists especially from Norway, Germany, Great Britain and Denmark, although Swedish citizens accounted for 86 % of the overnights.
The table below shows that most overnights in hotels are for business purposes in Västra Götaland, 47 %, which is about the same as for Skåne and the national average. However in Halland most overnights in hotels are for leisure, 45 %.

### OCCUPIED HOTEL ROOMS IN PERCENT BY PURPOSE IN 2015

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Västra Götaland</th>
<th>Halland</th>
<th>Skåne</th>
<th>Sweden</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business</td>
<td>47,3 %</td>
<td>32,9 %</td>
<td>46,8 %</td>
<td>48,2 %</td>
</tr>
<tr>
<td>Conference</td>
<td>7,9 %</td>
<td>16,7 %</td>
<td>9,4 %</td>
<td>9,7 %</td>
</tr>
<tr>
<td>Group</td>
<td>7,1 %</td>
<td>5,0 %</td>
<td>6,7 %</td>
<td>7,6 %</td>
</tr>
<tr>
<td>Leisure</td>
<td>37,7 %</td>
<td>45,4 %</td>
<td>37,1 %</td>
<td>34,5 %</td>
</tr>
<tr>
<td>Total</td>
<td>100 %</td>
<td>100 %</td>
<td>100 %</td>
<td>100 %</td>
</tr>
</tbody>
</table>

Source: Statistics Sweden and Swedish Agency for Economic and Regional Growth, retrieved from regonfakta.com.

Gothenburg is the most important and fastest growing destination in West Sweden with 60 % of the overnights (in hotels and hostels). Every year around 1,8 million people visit the Swedish Exhibition and Congress Centre in Gothenburg, many of whom for business purposes.

An estimated 43 000 people are employed in tourism and affiliated sectors in West Sweden. HUI Research estimated that the sectors’ turnover in Västra Götaland was 42 billion SEK in 2015, which is an increase of 7,3 % since 2014. Tourism accounts for 2 % of the BRP. (HUI Research, 2016)

### The tourism sector in Western Scandinavia

Looking at Western Scandinavia, most overnight stays are made in Greater Copenhagen and West Sweden. Different parts of the megaregion have visitors with different origin. In the counties without a metropolitan city, like Halland and Östfold, almost all visitors are from the home country. In Oslo, a relatively large part is visitors from different countries in Europe. Västra Götaland has a very high proportion of Nordic visitors. Skåne has a high share of Swedish and German visitors while Copenhagen has visitors from all over the world.
20 percent more jobs in tourism in five years
Tourism industry has become more important over time. As an example the number of jobs in hotels and restaurants has grown with more than 20 percent since 2009 in the Swedish parts of Western Scandinavia. There is a strong increase in overnight stays in almost all parts of the megaregion including Copenhagen and with the exception the Oslo region with a more modest growth. In relative terms all the parts of the megaregion are those who develop strongest in the respective country.

**Cultural budget, policy and challenges in West Sweden**

**Collaborative cultural model in Sweden**
Since 2011 there is a collaborative cultural model in Sweden for allocating State allowances to regional cultural activities. The purpose of the model is to contribute to achieving national cultural policy goals, as well as providing opportunities to regional priorities and variations.

In 2016 the cultural budget in Region Västra Götaland was 1,480 million SEK, whereof 396 million SEK was State allowances from Swedish Arts Council and The Swedish national Council of Adult Education. In Region Halland the cultural budget was 171.8 million SEK, whereof 60.9 million SEK was State allowances from Swedish Arts Council and The Swedish national Council of Adult Education.

The figure shows the regions’ cultural budget per capita in 2015, which is 356 SEK for Halland and 970 SEK for Västra Götaland, the largest investment in culture from a region in Sweden. Average for all regions in Sweden is 501 SEK, (SKL, 2016)

**Challenges: improve the preconditions for arts and culture and widen participation by utilize technology**
In the cultural strategy for Västra Götaland five strategic areas are highlighted: to widen participation, to develop capacity, to promote innovation, to utilize technology and to increase internationalisation. The key word is collaboration. Two areas are particularly important for cultural policy and thus represent the main challenges: the perspectives of widening participation and preconditions for innovative art. The other strategic areas are rather actions to achieve the objectives. The Cultural Affairs Committee in Region Västra Götaland has adopted guidelines for the strategic areas.

Digitalisation offers new possibilities to broaden participation. However digitalisation may also lead to uniformity through so called filter bubbles; the culture offered through the Internet is increasingly adapted to the individual with the help of self-learning algorithms. “Publicly financed culture becomes an even more important complement to the commercial cultural offering if the latter were to become uniform and/or stop questioning established perspectives of mankind and society in the future.” (Swedish Agency for Cultural Policy Analysis, 2015:3)

A selection of cultural policy documents at the regional level are listed in Appendix 5 together with a reference list to this chapter.
Environmental Sustainability in West Sweden

Megaregion Western Scandinavia
Cities and regions in Western Scandinavia have ambitious visions and strategies to become fossil-independent in the coming decades. The emissions of greenhouse gases have been cut by between 10 and 20 percent in the different parts of the region in the last decade. This decoupling has taken place despite a fast growth in population and economy, and despite the fact that all of the Swedish refinery capacity is located in parts of West Sweden. Several cross border projects are running in this area but there is room for more strategic co-operation. The megaregion is also characterized by low negative effects on health due to environmental problems. Last but not least there is a common interest in the coast area and the ecosystems of the sea. Enough land and sea needs to be preserved to safeguard biological diversity and the question of eutrophication should be high on the agenda.
In an international perspective Sweden can, in several ways, be seen as a forerunner on environmental sustainability. The Yale Environmental Protection Index ranks Sweden at 3rd place among 180 countries. Nordic countries are at the first four places with Finland in the lead followed by Iceland, Sweden and Denmark. Norway is at number 17.

ENVIRONMENTAL PROTECTION INDEX 2016 – SWEDEN – SCORE AND RANK

<table>
<thead>
<tr>
<th>RANK OF INDICATOR</th>
<th>SCORE</th>
<th>RANK</th>
<th>10 YEAR CHANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Impacts</td>
<td>99.03</td>
<td>5</td>
<td>1.91%</td>
</tr>
<tr>
<td>Air Quality</td>
<td>93.26</td>
<td>22</td>
<td>23.03%</td>
</tr>
<tr>
<td>Water and Sanitation</td>
<td>99.57</td>
<td>16</td>
<td>-0.07%</td>
</tr>
<tr>
<td>Water Resources</td>
<td>96.08</td>
<td>12</td>
<td>6.71%</td>
</tr>
<tr>
<td>Agriculture</td>
<td>160</td>
<td>1</td>
<td>7.24%</td>
</tr>
<tr>
<td>Forests</td>
<td>16.32</td>
<td>107</td>
<td>-0.43%</td>
</tr>
<tr>
<td>Fisheries</td>
<td>50.82</td>
<td>63</td>
<td>13.46%</td>
</tr>
<tr>
<td>Biodiversity and Habitat</td>
<td>88.76</td>
<td>57</td>
<td>3.61%</td>
</tr>
<tr>
<td>Climate and Energy</td>
<td>92.73</td>
<td>16</td>
<td>0%</td>
</tr>
</tbody>
</table>

Source: epi.yale.edu/country/sweden

The weakest points in environmental sustainability for Sweden, and for West Sweden, are all related to ecosystems, habitat preservation and environmental services. Forest, fisheries and biodiversity are problem areas. In part this is a reflection of the fact that Sweden is a large country with an active use of natural resources and with a relatively low share of preserved land and water. The international recommendation on preservation of 17 percent of the area is only met halfway in West Sweden.

On the other hand, environmental systems that are more directly related to people, like agriculture, health impact, water resources and sanitation and air quality are strong. Sweden have a long tradition of environmental work in these areas, in general based on national laws and regulations, which means that the situation today is mostly the same in all parts of the country.

Sweden also has a strong position when it comes to climate and energy. One reason is an energy-system that for more than 30 years almost to one hundred percent has been based on water and nuclear power for producing electricity. Fossil fuels are today primarily used in transportation and industry. In transport, the share of fossil fuels has gone down from 96 percent in 2000 to 84 percent in 2014. For industry the corresponding figures are 27 to 19 percent.66

Nationally, the Swedish Parliament has decided on a comprehensive environmental policy with the very ambitious overall objective to hand over to the next generation a society in which the major environmental problems have been resolved. This should be done without causing environmental and health problems outside Sweden. In addition to the generation objective there are 16 environmental quality objectives with specifications and milestones that are monitored on the national and regional level. The County Administrative Board is responsible for coordinating the work to implement and evaluate the development of these on the regional level. Environmental problems are certainly not easy to solve in a final way. The conclusions for West Sweden is that only two or three of the objectives will be met by 2020.

In the perspective of societal development in general and linked to larger megaregion of Western
Scandinavia questions that have a connection to transport infrastructure, communication, buildings, noise,
the sea is the most relevant. In West Sweden the questions of climate change, sustainable consumption,
sustainable urban development and marine development and the sea in general most important.

Climate change and greenhouse gas emissions

To gain an overall picture of climate change, both a geographical perspective and a consumption
perspective are required. The geographical perspective is the more established with a focus on greenhouse
gas emissions that take place in West Sweden from production, transportation, electricity and heat
generation. The consumption perspective, on the other hand, describes the climate impact caused by west
Swedes’ consumption patterns, both in West Sweden and the rest of the world. The differences between
these two perspectives are shown in the figure below.

Emissions of greenhouse gases in West Sweden have been reduced by 17 % or 2.4 million tons since
1990. Figure x shows that emissions have decreased successively in recent years. The reduction is
somewhat slower than that for Sweden in general. This is due to the fact that all of the Swedish refinery
capacity is located in West Sweden. If we compensate for that, development is at the national level.

The largest single source of emissions in West Sweden is the refineries. Industrial activities, i.e. the
refineries and other industries account for almost half of the emissions. Road transport accounts for one
quarter of the total emissions. The greatest reduction in emissions has occurred in energy supply. The
main reason is the transition from oil to district heating and that emissions from energy supply have

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The geographical perspective

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The geographical perspective
declined. In addition, emissions from the waste sector have decreased considerably. Emissions from road transport have decreased with 12% from 2010 breaking a trend of increasing emissions from 1990 onwards.

The presented trend could be seen as a start for decoupling of economic growth from emissions of greenhouse gases in the region. Emissions per capita decreased from 7.8 tons in 2000 to 6.0 tons in 2014. Emissions relative to the total production in West Sweden fell by 38%. One factor that contributed to this relatively dramatic decrease was the continued general restructuring of the industry and a rapid transformation from industrial production to qualified service production.

The consumption perspective gives partially another answer. The greenhouse gas emissions from Swedish consumption are at a level around 10 million tons per capita and have been quite constant during the last decades. From 2010 there is a trend of reduced values (-7% in total). The share of emissions from countries outside Sweden has risen from 53% in year 2000 to 64% in 2013.68 In collaboration with researchers the city of Gothenburg has calculated which parts of a person’s lifestyle and consumption patterns are most important from the climate perspective. At the left hand side the emissions in 2010 is shown. At the right hand side the vision for 2050.

**CLIMATE IMPACT FROM A CONSUMER PERSPECTIVE - CALCULATIONS FOR THE CITY OF GOTHENBURG**69

### Policy ambitions on greenhouse gases

Cities and regions in West Sweden in general have ambitious strategies and plans to make the area fossil independent. The climate question is high on the political agenda. Focus is on societal challenges and changing regional systems to more sustainable ones in transport, housing, consumption, etc. For Västra Götaland the objective is to be fossil independent by 2030.70 The strategy is about society as a whole and based on co-operation between actors from all parts of society. The climate program for Gothenburg city aims at having sustainable levels of greenhouse gas emissions in a consumer perspective by 2050.71

In a national perspective Region Västra Götaland (in its own organization with a turnover of approx. 50 billion SEK and 53,000 employed) has a strong position when it comes to ecological food and renewable


69 The figures are taken from the "Climate strategic programme for Gothenburg". They refer to the average person in Gothenburg and is based on data from the report *Climate transition Gothenburg 2.0 Technical opportunities and lifestyle changes*. Mistra Urban Futures Reports 2014:02. Larsson, J., & Bolin, L. (2014)

70 Region Västra Götaland/County Board of Västra Götalands län (2016); Strategic choices for a good life in a fossil independent region 2030

71 Gothenburg city (2014); Climate Programme for Gothenburg
fuels in public transport. 40% of the food served in hospitals in Västra Götaland is now organic and more than 80% of the fuel used in all public transport in West Sweden was renewable in 2015.72

Sustainable consumption is a very strong trend in the Nordic countries with Sweden and Denmark as the world leading countries in share of organic food sold in stores. Both countries could reach ten percent in 2016. The development in Sweden has been remarkable with a 40% increase two years in a row.73 The sale of Fairtrade products has on average increased by 25% per year in the last five years. Both trends are strongest among young people (especially women) and students in the university cities. Six out of ten in the age group 20-30 years in West Sweden says that they often or quite often buy goods that are organic and fair trade-marked.74 More than half in this generation states that we should be a forerunner when it comes to climate change even if it will mean increased costs.75 The sharing economy can be seen as one way of transforming society in a more sustainable direction linked to consumption. Gothenburg has officially proclaimed itself as a “sharing city”. Sustainable consumption is also about the circular economy. The share of waste going to landfill, recycling and waste to energy in Sweden 2014 was 16, 51 and 33 percent respectively.

Problems with air quality related to health are mainly a metropolitan question. It is only in Stockholm and Gothenburg that the number of days exceeded the environmental quality norm of seven days in 2015. The trend in later years is positive. Gårda in Gothenburg has gone from 90 days in 2010 to 15 in 2015.

The land area of West Sweden is 30,000 km², ⅓ of the size of the Netherlands. West Sweden covers 7% of Sweden land area, one fifth of the arable land and one sixth of the grazing land and of built up land. In West Sweden more than 60% of the land is forest with over 50% used as productive forested land. Agricultural land is almost one quarter of the area with arable land dominating. Västra Götaland has more arable land than any other region in Sweden. The share of built up land and land associated to this is not more than 6% of the total land area. West Sweden are in overall terms sparsely populated but quite dense, in many cases as dense as in Stockholm, where people actually live. Having said this, there is in general no lack of green space in the cities.

When it comes to water there are several long term challenges in the region. One fundamental question is to ensure drinking water quality in the future. Water quality today is often excellent and water resources abundant except in the archipelago, but climate change and a high proportion of dwellers with surface water can be a threat to this. The eco-systems for fish reproduction must be safe-guarded. The share of protected water should increase to live up to international standards both to preserve eco-systems and fish reproduction. Last but not least there is a need to keep the transport of nutrients to lakes and to the sea at a sustainable level.76 The last two points are, as mentioned in the beginning of this part, areas where the position of Sweden internationally is quite weak.

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72 http://webbank.skl.se/sv/artiklar/oppora-jamforser-miljoarbetet-2016-i-landsting-och-regioner.html
74 Region Västra Götaland (2016); Unga vuxna i Västra Götaland, in Report ...
75 Ibid
76 County administrative board of Västra Götalands län, 22 November 2016
Appendix 1: Projects covering Megaregion Western Scandinavia inside the EU Interreg program Öresund-Kattegatt-Skagerrak
<table>
<thead>
<tr>
<th>Name of project</th>
<th>Project owner</th>
<th>Project partners</th>
<th>Budget EU (EUR)</th>
<th>Total budget</th>
<th>WWW</th>
</tr>
</thead>
<tbody>
<tr>
<td>GameHub Scandinavia</td>
<td>Viden Djurs</td>
<td>Fleksibel utdanning Norge, Ehrvervsakademi Dania, The Animation Workshop, Aalborg kommune, Högskolan i Skövde, Gothenburg Innovation AB &amp; Folkuniversitet i Skövde</td>
<td>1816486</td>
<td>3939282</td>
<td>gamehubscandinavia.dk</td>
</tr>
<tr>
<td>ESS &amp; Max IV: Cross Border Science and Society</td>
<td>Region Skåne</td>
<td>Region Skåne, Region Hovedstaden, Universitetet i Oslo, Region Skåne/Näringsliv, Lunds universitet, MAX IV, Københavns kommune, Danmarks Tekniske Universitet, Big Science Sekretariatet (DTU), Aarhus universitet, Arbeftsformidlingen, Chalmers Tekniske Högskola, Copenhagen Capacity, ESS European Spallation Source, Forskningskassen Malmø, Göteborgs universitet, Helsingborgs stad, Industriellt utvecklingscentrum i Skåne AB, Invest i Skåne AB, Københavns universitet, Lunds kommun, Länsstyrelsen i Skåne län, Skatteverket, SKAT Danmark, Malmø högskola, Malmö stad, Medicin Village AB, Öresundskommittén</td>
<td>8970475</td>
<td>18976308</td>
<td>scienceandsociety.eu</td>
</tr>
<tr>
<td>ScandTiek Innovation</td>
<td>Jönköpings Län Landsting</td>
<td>Sorlandet Sykehus Helseforetak, Region Skåne, Suhlgrenska Universitetetsjukhuset, Sveriges lantbruksuniversitet, Örebro universitet, Folkhelseinstitutet, Universitetet i Agder, Norges Miljø- og biotransportkompagni universitet, Danmarks Tekniske Universitet &amp; Stains Serum Institut</td>
<td>3389526</td>
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<td>scandtiek.com</td>
</tr>
<tr>
<td>FoodNexus Nordic</td>
<td>Lunds universitet</td>
<td>Københavns universitet, Nofima A/S, Danmarks Tekniske Universitet Fodlevarestyrelsen, Malmö högskola, Högskolan i Kristianstad, IL Service AB (Livsmedelsförening), SP Sveriges Tekniska Forskningsinstitut, Skånes Livsmedelsakademi, Päckbröd AB, Sveriges Lantbruksuniversitet, Västra Götaland, Region Halland, Agro Business Park, Chalmers tekniska Högskola, Aarhus Universitet, Högskolan i Halmstad, Eslov kommun &amp; Region Skåne</td>
<td>1856660</td>
<td>3965904</td>
<td>interreg-oks.eu/projektbank/projekt/foodnexusnordic.5.17ace68146dd7da2b6d855.html</td>
</tr>
<tr>
<td>MarGen</td>
<td>Göteborgs universitet</td>
<td>Hafvorskninginstitutet, Universitetet i Oslo, Universitetet i Agder, Norsk Institutt for Vannforsknings Aarhus universitet &amp; Danmarks Tekniske Universitet (Agua)</td>
<td>1568743</td>
<td>5013560</td>
<td>interreg-oks.eu/projektbank/projekt/margen.5.17ace68146dd7da2b6d853.html</td>
</tr>
<tr>
<td>Technordic</td>
<td>Business Region Göteborg</td>
<td>BrainBusiness, Chalmers Ventures AB, Lindholmen Science Park AB, Connect Väst, Universeum AB &amp; IKT-Norge</td>
<td>610000</td>
<td>1936689</td>
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</table>
Appendix 2: Five Driver Sectors - BAK Basel Economics definition
Five Driver Sectors- BAK Basel Economics definition

Methodological Notes:
For an explanation of the type of graph see next slide.

In analysing an economy, it often provides helpful insights to analyze specific industries or sectors separately. But dividing the economy into too many different industries can also be confusing and might hide the actual structures of interest under a bulk of information. Therefore, BAKBASEL applies a concept to collect the individual industries into 'Driver Sectors' with common properties. One common property of the industries in a sector is productivity (level and growth). These 5 aggregates — called the five <drivers sectors> — are:

<table>
<thead>
<tr>
<th>The &quot;Urban&quot; Sector</th>
<th>The &quot;Traditional&quot; Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Trade and repair of automobiles and consumer durables</td>
<td>- Food, beverage, tobacco products</td>
</tr>
<tr>
<td>- Financial and business services</td>
<td>- Textiles, garments, fans, leather products and shoes</td>
</tr>
<tr>
<td>- Transport</td>
<td>- Processing of wood</td>
</tr>
<tr>
<td>- Hotels and restaurants</td>
<td>- Paper- and boardmaking / Printing and publishing</td>
</tr>
<tr>
<td>- Entertainment, culture and sport</td>
<td>- Coke, refined petroleum products</td>
</tr>
<tr>
<td>- Personal services</td>
<td>- Rubber and plastic products</td>
</tr>
<tr>
<td>- Private households</td>
<td>- Other products from nonmetallic minerals</td>
</tr>
<tr>
<td></td>
<td>- Metals and metal products / Mechanical engineering</td>
</tr>
<tr>
<td></td>
<td>- Manufacturing not elsewhere classified</td>
</tr>
<tr>
<td></td>
<td>- Construction</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>The &quot;New Economy&quot; Sector</th>
<th>The &quot;Political&quot; Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Computers and office equipment</td>
<td>- Primary sector</td>
</tr>
<tr>
<td>- Telecommunication equipment</td>
<td>- Energy and water supply</td>
</tr>
<tr>
<td>(ind. electrical engineering)</td>
<td>- Research and development</td>
</tr>
<tr>
<td>- Telecommunication services</td>
<td>- Public administration etc.</td>
</tr>
<tr>
<td>- IT-Services</td>
<td>- Education</td>
</tr>
<tr>
<td></td>
<td>- Health and social services</td>
</tr>
<tr>
<td></td>
<td>- Sewage treatment, refuse disposal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>The &quot;Old Economy&quot; Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Chemicals and pharmaceuticals</td>
</tr>
<tr>
<td>- Precision and optical equipment, watches</td>
</tr>
<tr>
<td>- Manufacture of vehicles</td>
</tr>
</tbody>
</table>
Appendix 3: Strong Clusters – challenges and trends in the Gothenburg region
General and in common for all the cluster

Globalisation and digitalisation are megatrends and a challenge for all clusters. Sweden and Scandinavia is comparatively a small market and most companies do have to expand their export activities in order to be profitable. Regardless the size of the companies and branch, most of them see the recruiting of talents and competence enhancement as major obstacles either at present or in the nearby future.

Companies in general see both challenges and business opportunities with environmental and climate development. The city of Gothenburg as well as other municipalities in the region and the regional authority (Region Västra Götaland) has ambitious environmental and climate targets as well as programs creating both demands on the industry and creating business opportunities for sustainable solutions, products and services. The so called clean-tech sector (not a cluster in itself, since the companies are in various branches) can flourish in such an environment. This could be the reason why the Gothenburg Region hosts the highest number of clean-tech companies in Sweden, and with the highest export (Vinnova, SCB).

A large number of companies in the region are SMEs which is an obstacle when it comes to the ability to meet global needs of their solutions and export. Joint venture in longer value-chains and cross branch cooperation gives a potential for increasing export. However, in many branches Sweden lack turn-key companies for large scale solutions.

Creative Industries (CI)

CI is a common name for 15 different branches within cultural and creative industries. In 2015 there were about 5 700 establishments in the region, with around 7 400 employees. Most of the companies are in other words small but there are also companies within communication and media, music production and scenery that are ranked as world leading (The Big Won). There is a high growth potential in “cross-clustering” between the CI and more traditional industry in order to achieve new innovations. In this cluster the challenges are; to keep the talents and make them feel that there is a possibility for them to grow in West Sweden and the City of Gothenburg; the issue of space and costs of renting localities. Many of the CI companies need to develop their skills in business development as well as consider digitalisation, since culture focus participation rather than consumption.

Major recent establishments: Dobus Digital Agency, Forsman & Bodenfors Acquisition/Capital Investment

Major strategies: Visibility and dialog with politicians, talent attraction, cluster activities and incubator for CI companies.

Chemistry, Energy and Material

The Swedish Chemical Industry has its primary location in Stenungsund north of Gothenburg. Five global companies (Inovyn, Perstorp, Aga, Borealis, AkzoNobel) in Stenungsund have 2500 employees and a yearly turnover of more than 20 billion SEK. In the Gothenburg region there are in total 72 establishments with 4 100 employees. In Gothenburg and Lysekil there are also refineries (Preem, St1) where most of the Swedish production of renewable and non-renewable energy fuels are produced. The chemical industry together with the waste companies, forest companies, the academia and research institutes and NGOs are all member of the West Swedish Chemical and Material Cluster. This cluster has a focus on contributing to a fossil-free region. There is also a number of energy sub-cluster in the region. E.g. district heating including combustion of wood waste for biogas and heat production. Gothenburg is
the lead in EU finance cooperation called “Celsius” with a total of 50 cities in Europe that develop district heating and cooling solutions (www.celsiuscity.eu).

The international base for the super material Graphene development and research is situated at Chalmers Technology University. Strategic research platforms are created with participation of the industry in light-material development.

A major challenge for the chemical cluster is to attract young people to take a degree in chemicals. The global competition is increasing in the cluster.

**Major recent establishments:** ST1 Refinery expansion, Broadview LNG, Preem Biorefinery expansion.

**Major strategies:** Strengthen the cluster organisation and platform at Johanneberg Science Park. Close cooperation with the Universities and educational institutes regarding the content of the educational program, competence enhancement, establishing working groups with participants from industry, focus on resource efficiency, renewable fuels and materials and competence development.

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**Information and Communications Technology (ICT)**

ICT is one of the regions strongest growth industries spanning more than 6,300 different companies with more than 29,000 employees. These include Ericsson, along with the company's second largest research and development facility, Volvo IT & HCL, Telia Sonera and Saab Microwave Systems. Strong sub-clusters within ICT; embedded systems, infrastructure and cloud, microwaves, mobile technologies, and visualization and gaming. Other important areas of implementation are eHealth, MedTech, Smart Grids and Logistics. The region is a favourable environment for actors in ICT with two universities that offer research and education, several major industrial companies and close collaborations between enterprise, academia and the public sector. There are also large industries in need of new IT solutions, such as the automotive industry, the logistics sector and the life sciences. In West Sweden Skövde is also a strong centre for visualisation and a growing ICT cluster with connections to the clusters in Gothenburg.

Cross-disciplinary and cross-industry collaborations are channelled via three science parks, the largest being Lindholmen Science Park with a focus on vehicles, ICT and media. Lindholmen is home to Vehicle ICT Arena, which works with vehicle IT, PICTA, which is a development centre for ICT functions in ambulance environments, and Visual Arena, a neutral environment for development projects in visualisation. Also found here is Open Arena, which is a physical meeting place for open innovation and research collaboration across boundaries.

The region also has several incubators, such as Chalmers Ventures, GU Ventures and Sahlgrenska Science Park, where new projects and spin-off companies can get help with business development, premises, financing and more. In spite of this, to attract talents, increase export and innovation capacity are crucial challenges for these clusters and to compete with other global clusters in attractiveness.

**Major recent establishments:** HCL Technologies, Tech Mahindra

**Major strategies:** Talent attraction, competence enhancement in general, internationalization, cutting edge clusters and cross-clustering with the other strong regional industries.
The Swedish automotive industry has its heart in West Sweden with a strong concentration on OEMs with the Volvo Car, Volvo Group and CEVT in Gothenburg. There are also sites in Skövde where Volvo produces most of their engines and to the fairly new OEM focusing on electric cars NEVS, replacing SAAB, in Trollhättan, and the world leading safety company Autoliv, in Vårgårda. In the wider cluster perspective these OEMs drive the business and outsourcing for a large cluster of consultants, ICT experts etc., located all over West Sweden. In the Gothenburg region alone, the industry employs more than 26,000 people. Here we can find the entire vehicle production chain, unique test environments and broad expertise. With Volvo to the fore, a strong transport and automotive industry has developed, encompassing several large international businesses and subcontractors. Volvo Cars is the largest private employer in the region, followed by Volvo Trucks.

Together, the Gothenburg region’s large companies represent more than 60 percent of Sweden's total investments in automotive research and development. These investments generate innovation and expertise in a number of areas. Volvo truck is cutting edge in hybrid technology and Volvo Cars and Autoliv leading in safety solutions. An important key to the region’s success in the automotive industry is the collaboration between enterprise, academia and the public sector. One example of this is ElectriCity – an exciting cooperative venture bringing together industry, research and society in the development and testing of solutions for next-generation sustainable public transport. The bus-route 55 offers quiet, exhaust-free buses that pick up passengers indoors and are powered by electricity from renewable sources. This cooperation attracts visitors, investors, politicians, decision-makers from all over the world and have received a number of prices (www.goteborgelectricity.se/en). The ElectriCity Scene also attracts new innovative solutions.

Lindholmen Science Park and Johanneberg Science Park in Gothenburg channel such collaboration and act as platforms for cross-disciplinary and cross-industry projects. Projects that include Test Site Sweden, developing test and demonstration environments for sustainable transport, Telematics Valley, working with vehicle-related telematics, and the automotive ICT Arena, gathering actors in the field of vehicle IT as well as SAFER (www.chalmers.se/safer/EN/) an international centre for safety issues within the automotive and transport sector. Collaboration within the region has resulted in AstaZero, the world’s first full-scale test environment for traffic safety of tomorrow. The automotive industry exhibits strong development towards greener and more efficient goods and passenger transport, with focus on autonomous driving and electrification in both cars and heavy vehicles. Reaching the Swedish government's vision of a fossil fuel-free vehicle fleet by 2030 requires alternative fuels and electric vehicles.

The cluster is expanding in number of companies, investments and export volumes, both amongst the OEMs, the service sector and the sub-contractors in the industry. To attract competence and talents in the same speed as the growth is the major challenge, together with the logistics of goods transportation during the extensive construction on city development and infrastructure in the region.

In fact, the largest industrial cluster in the region is infrastructure and logistics, with more than 30,000 employees. Gothenburg and West Sweden is an important import and export hub and has been named Sweden’s best logistics location for more than ten years running. A key factor is the Port of Gothenburg, which has a reach of about 190 million inhabitants in ten Nordic and Baltic countries. The major challenge for this cluster is the price of transportation and the competition with actors from Eastern Europe. The needs of transportation of both people and goods will increase and the infrastructure and the logistics are challenges in themselves. Investment is needed in localities in nearby areas of the port in Gothenburg, Landvetter Airport, capacity of rail and roads, the port, city planning etc.
**Major recent establishments:** CEVT, Voith Industrial Services, Autoliv expansion in partnership with Volvo Cars.

**Major strategies:** Attract talents, competence enhancement in general, large-scale test- and demonstration projects, autonomous driving (DriveMe with 100 cars in a real life test in the City of Gothenburg. Starts June 2017 [http://international.goteborg.se/smart-cities-and-sustainable-solutions/driveme-self-driving-cars-sustainable-mobility](http://international.goteborg.se/smart-cities-and-sustainable-solutions/driveme-self-driving-cars-sustainable-mobility)), electrification (ElectriCity), digitalisation of the services, cross-clustering with other sectors such as with ICT and city development, expanding their market.

**Life Science**

Gothenburg has been the scene of several breakthroughs in life science over the years. One of the world's biggest selling drugs, the stomach ulcer medication Losec, was developed here, as was a more effective treatment for Parkinson's disease. The latter was developed in collaboration between the pharmaceutical industry and Professor Arvid Carlsson, who received the Nobel Prize in Physiology/Medicine, in the year 2000.

Gothenburg also has a strong international standing in both odontology and biomaterials. Today West Sweden is a leading center for clinical research, biotech, medtech and pharma. Stem cell research, cell therapy and regenerative medicine are other areas in which the region is working to be at the front, as are the fields of cardiovascular and metabolic medicine and vaccination.

The cluster today is one of the most expanding industries with 542 establishments employing 9 400 people. It is a strategic cluster for the Region of Västra Götaland and region Halland, well connected with the largest University hospital in northern Europe. Close collaboration between academia, the public sector and industry makes the region attractive to companies. The largest employer in biomedicine is AstraZeneca. The company has in later years opened up its facilities for SMEs in the sector, in their Astra Hub and development centre. It is a trend and challenge that the large life science companies do not work in the early research and development phase any longer and need to work in partnerships with SME, hospitals and academia. The need to find new and better partnership is the driving force for the enlargement of the Life Science cluster and regions are competing in offering the best cluster conditions.

**Major recent establishments:** Mentormate, Cerner, Sahlgrenska Life Intention,

**Major strategies:** Attract talents, competence enhancement in general, create a stable cluster platform and activities at Sahlgrenska Science Park, establishment of stronger links between the big companies, the SMEs, and the hospitals.

**Maritime Clusters**

West Sweden has a long coastline to the west and the maritime clusters are crucial and strategical important. The Port of Gothenburg is the largest port in Scandinavia and a gateway to the world for much of Swedish industry. Western Sweden is home to 3,000 maritime companies with some 20,000 employees, corresponding to 45% of the maritime industry of Sweden. The employees are divided in to a number of branches, such as maritime operations, seafood, tourism, energy production, maritime technology etc. Sustainability is a key question for the industry. Clean oceans, water and coast are crucial for the industry, and the planet. It requires new solutions and behaviour as well as new competence in the maritime industry, to stay competitive.
The maritime industries have left their mark on our coastal area. Today, West Sweden comprise a Nordic shipping hub in the shape of the Port of Gothenburg and with companies such as Volvo Penta producing engines, a centre (Lighthouse www.lighthouse.nu/) for research and development in maritime environments and maritime development, and a Swedish fishing center.

**Major recent establishments:** Aker Solution Expansion and Sigma Industry West

**Major strategies:** Increase SMEs capacity building, enlargement of the cooperation between the industry, society and the academia in order to create new innovations, attract new competence and making the young people interested in the sector.
Appendix 4: Reference list for Accessibility and transport
Reference list: Accessibility and transport

- Arbetspendling i storstadsregioner – en nulägesanalys, Trafikanalys 2011:3
- Godstransportflöden Trafikanalys 2016:9
- Godskartläggning i Västra Götaland, 2013, WSP
- Godstransportstrategi (2016), Västra Götalandsregionen
- Kollektivtrafikbarometern, Svensk kollektivtrafik
- Landsbygdsutredningen, kollektivtrafik i Västra Götaland, 2014
- Local and regional public transport, Trafikanalys
- PTS bredbandskartläggningen
- Port statistics 2014, Sweden’s ports
- Resvägsundersökning 2006, Västtrafik
- Regional transportinfrastrukturplan, Västra Götalandsregionen
- Regional transportinfrastrukturplan, Region Halland
- Regionalt trafikförsörjningsprogram, Västra Götalandsregionen
- Regionalt trafikförsörjningsprogram, Region Halland
- Swedish transport administration
- SCB, Swedish statistics
- The Swedish national travel survey, Trafikanalys
- Uppföljning av bil och kollektivtrafik, Västsvenska paketet 2016
- Uppföljning regionalt trafikförsörjningsprogram 2015, Västra Götalandsregionen

Reference list: The planning process- Challenges and objective in West Sweden

- Godstransportflöden Trafikanalys 2016:9
- Godstransportstrategi, Västra Götalandsregionen
- Regional transportinfrastrukturplan, Västra Götalandsregionen
- Regional transportinfrastrukturplan, Region Halland
- Regionalt trafikförsörjningsprogram, Västra Götalandsregionen
- Regionalt trafikförsörjningsprogram, Region Halland
- “The best place to live” Vision Halland
- “The good life”, Vision Västra Götaland
Appendix 5: Selection of cultural policy documents at the regional level and reference list.
Cultural Strategy for Västra Götaland:

Guidelines for the strategic area widening participation: The right to participate in cultural life:
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