Final peer review report

South Trøndelag County
Summary

The county of Sor Trondelag has a good network of partnerships and organisations involved in stimulating innovation and business growth, with the university and its existing activities being central to these activities as well as significant assets in terms of natural resources.

However, the removal of oil revenues and the benefits it currently brings highlights a number of issues, and also dovetails well into the desired situation in Sor Trondelag, that is, to think beyond the oil and consider the future sustainability of the region and sub region.

A number of recommendations will help the region improve. These include a more focused tourism strategy for the region, examining skills gaps, better use of data to project growth and current and future skills needs and linking this data to the provision of retraining or adult learning programmes as well as considering language training for economic migrants. Tying in the university and other stakeholders into possible targets, or some other forms of incentives should also be considered to widen the current activities of the existing key players – not least to extend their involvement beyond the core city centre area of Trondheim. It is also proposed that the stakeholders widen their existing good work with business to include more general support for SMEs. Overall however, peers felt that the potential for untapped labour and skills amongst the high levels of people on benefit may be being overlooked as a possible, at least part, solution to the skills gaps that partners felt existed.

Introduction

(a) Short introduction to the SMART Europe Project

SMART Europe is based on the concept that smart and targeted regional policies and interventions can be designed to boost the employment directly in the regional innovation-based sectors.

With this aim, a consortium of 13 partners, representing 11 EU regions, will exchange policies and instruments for identifying and supporting the main regional economic actors that can generate job opportunities in the innovation based sectors of their economy.

SMART Europe will support decision makers to improve their strategies with the aim of incorporating the creation of employment as an additional key feature of their activities.
(b) Short introduction to the Peer Review methodology

SMART Europe Peer Review Methodology helps regions to improve their policies in boosting employment in the sector of their “innovation anchor”.

The SMART Europe Peer Review Methodology is an adaptation of the peer review methodology of the Assembly of European Regions (AER), developed directly to use it during the SMART Europe project, when assessing different regions’ innovation anchors. The methodology standardises the relevant aspects that need to be measured, in order to enable experts with different background, to assess the regional situation in an objective way. By this, they will be able to give appropriate recommendations on the field of innovation-based job creation in the host region. The other important advantage of peer reviews is the selection of experts, who are practitioners in the field of the assessment, which means that the recommendations given by them after the review will be practical and realistic.

The Peer Review took place between 11-14 February 2013. The Peer Review Team was made up of representatives from 4 partner countries, namely:

**UK**
- Russell Yates – Manchester Metropolitan University
- Anne Dornan – Manchester Science Parks
- Philip Cowper – Tameside Enterprise Board

**Hungary**
- Zsofia Munnich – Észak-Alföld Regional Development Agency
- Orsolya Gregán – Észak-Alföld Regional Innovation Agency

**Spain**
- Roberto Rodriguez – Avila County Council
- Carmen Jiminez Navarro – Avila County Council

**Finland**
- Emmi Saarinen - The Baltic Institute of Finland
- Ilkka Virtanen - Tampere University of Technology Research and Innovation Services
Section 1: Overview

(a) Short description of the Host Region, general overview, economic profile.

Background
Sør-Trøndelag is a county in the Trøndelag area of Norway with a total population of approximately 300,000, 200,000 of which live in the city of Trondheim. The Norwegian University of Science and Technology is based in Trondheim offering the highest technological education in Norway as well as a broad range of studies in areas including social studies, humanities, science, medicine, architecture and the arts.

Democratic Representation
Sør-Trøndelag County Authority is the democratically elected body with responsibilities for public welfare, including:
- Regional Development: responsibility for regional planning and coordination of environmental provisions and also cultural provision;
- Education: responsibility for 22 upper secondary schools (11,000 students aged 16-21) offering general and vocational education. The Authority is also responsible for apprenticeship training and adult education;
- Transportation: including construction and maintenance of roads, allocation of resources to local bus and boat routes, permit allocation, taxi licencing and transport for people with disabilities;
- Economic Development: allocation and selection of projects, guidance and financial support;
- International engagement: through a number of EU funded programmes;
- Dental Care: the Authority also funds dental care for young people 0-20 years with 28 centres across the county.

Economy
Mining was the traditional industry over 300 years but now relies heavily on the off shore oil industries, salmon fishing, tourism and high tech industries.

There are 2 GDP figures for Norway and its regions, one including ‘off shore’ oil gains and one without. GDP in the county is slightly lower than the national average, however, both are significantly higher than the EU average (of which Norway is not a member). Excluding oil, GDP per capita would see Norway as a whole ranked behind 6 EU countries, with oil it would rank 2nd after Luxembourg. No figures for the county in 2010 and 2011 are available:

<table>
<thead>
<tr>
<th>Year</th>
<th>Regional GDP per capita (€)</th>
<th>National average (€) *</th>
<th>EU (27) average per capita GDP</th>
<th>Where oil is excluded - EU countries with higher per capita GDP (€)</th>
</tr>
</thead>
</table>

SØR-TRØNDELAG FYLKESKOMMUNE
### Comments:

* Total National GDP per Capita/Mainland Norway GDP per capita (excluding the offshore economy).


Broadly, economic activity in the county falls into 3 main categories, with the majority of GDP creation in the region coming from the service sector (89%), along with the number of jobs (87.5%).

<table>
<thead>
<tr>
<th>Sector</th>
<th>Percentage of regional GDP (%)</th>
<th>Percentage of national GDP (%)</th>
<th>Percentage of employment in the region 2011</th>
<th>Percentage of employment on national level</th>
<th>Main activities in your region (Please list maximum 3 per box!)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary sector (agriculture &amp; fisheries)</td>
<td>1,37 %</td>
<td>1,89 %</td>
<td>3,17 %</td>
<td>2,66 %</td>
<td>Agriculture, aquaculture</td>
</tr>
<tr>
<td>Industrial and manufacturing sector</td>
<td>9,63 %</td>
<td>33,81 %</td>
<td>9,32 %</td>
<td>11,20 %</td>
<td>Construction, Food industry</td>
</tr>
<tr>
<td>Service Sector</td>
<td>89 %</td>
<td>64,3 %</td>
<td>87,51 %</td>
<td>86,14 %</td>
<td>Business services, merchandising</td>
</tr>
</tbody>
</table>

**Employment**

Unemployment in both the county and Norway as a whole is remarkably low and in 2011 stood at 3.2% in the region and 3.1% in Norway. The largest percentage of the unemployed comes from those people aged between 25-44 (57% of all unemployed are in this age range). However, despite these figures, the Employment Rate / Activity Rate is low which reflects high numbers of people on some kind of state benefit which does not
allow the unemployment rate to reveal its true figure and hides the real figures of people in work.

52% of those in work are employed in SMEs. 43% in public administration and the remainder in large private companies.

(b) Description of Peer Review focus (why it was chosen, specific questions and expected outputs of the Host Region)

The Innovation anchor in the region/county is the university (NTNU) and other colleges located in the region as well as the very strong R&D institution SINTEF. These institutions, in Trondheim (the regional capital) are operating relatively close to companies located in Trondheim, however once one moves outside the close perimeter of Trondheim companies hardly interact with the innovation anchors.

Assuming the companies have to innovate in order to maintain and strengthen their position as well as being key issue in setting up new companies, one clearly see the need to strengthen the R&D activities in the districts outside the Trondheim perimeter.

The focus of the peer review to take place in Sør-Trøndelag is to examine how it is performing in regards to support for R&D cooperation between its innovation anchors and the companies located in the districts. Essentially to examine what works well, what does not work and what can be improved.
Section 2: Regional Strategy

(a) Key Findings

- Job creation appearing in strategy;
- Innovation appearing in strategy;
- Coordination;
- Etc.

The County and the Region has a wide range of strategies for a number of areas including:

A Regional Strategy (covering 4 years)

A Regional Strategic Plan (annual)

The town of Roros has a local business strategy

In addition, there are a vast number of other strategies indicated in the image below:

However, given one of the major assets in the region is its natural beauty and potential tourism, there is no overarching or co-ordinated regional tourism strategy which brings together all of the various sized individual municipalities.
There is a significant gap in the availability of recent statistics and there is some evidence that more recent analysis of statistics could be used to identify further strategic objectives and project future strategic needs and aims (including their use to promote inclusion of under represented groups in employment and business support strategies, the needs of those claiming benefits to help them back into work, education and training). However, despite the lack of a systematic approach to data analysis and presentation of statistics, this was not true of all sectors, eg ICT and Digital sector.

(b) Recommendations

Consolidate existing strategies

Whilst there are many local, county, regional and national strategies, the abundance of strategies could be hindering understanding amongst all stakeholders of strategic aims and their involvement in delivering them. It is recommended that the County examines the potential for more simplification and synergy between strategies at all levels.

Consult more widely

There is evidence of consultation of local people for the development of a number of some strategies, however there is also concern from some stakeholders that their views could be taken into account more to enable them to bring the local needs of people into these strategies. This was noticable particularly in relation to stakholder needs and opinions in relation to a more bottom up and local consultation approach eg Tourism strategy.

Relate strategy to potential solutions

It became clear to the reviewers that ICT is largest growth area in the area, however despite knowledge of this fact, there is little evidence of the development of a Digital Strategy or its application to many problems identified. An effective digital strategy to aid the delivery of new ICT skills and the complementary role that this could play as a solution to enabling more people in remote areas to start up in business (eg by relating digital solutions and their application to existing skills to enable self employment in remote areas, and also by giving Business Support advisors the skills to understand how digital solutions can aid more start ups) and generally addressing a lack of skills in this area, could help to address a number of issues.

Examine gaps in strategy

There appeared to be a lack of understanding of the needs of people who are not in work, not only the small amount that are unemployed, but also those that are claiming state benefit. There was no evidence of how the county is supporting people with disabilities back into work, how gender issues relating to under employment are addresssses, or specific training programmes for recent migrants or existing Black and
Minority Ethnic communities. The development and delivery of an effective Employment Strategy could be a way to unlock under used potential and identify diversity issues, and allow currently under utilised assets with regards to diversity to bring about innovation.

(Re)/Educate all stakeholders in their role in delivering strategy

Whilst stakeholders are generally aware of existing strategies, many are unsure of their role in delivering the targets and appear to feel no ownership for the results that should accrue from their implementation. In addition it was noted that it might be helpful to bring NTNU into the design and delivery of all strategies, given their role as the main innovation anchor in the region.

Data collection and analysis

Consider the creation of an employment role within the County to provide, update, and analyse statistical data.
Section 3: Education and Human Resources

(a) Key Findings

There is a good understanding of the benefits by all stakeholders of the triple helix approach to supporting innovation and business support in general, however there may also be duplication in activity amongst stakeholders and also a lack of shared accountability for ownership of the achievement of targets set for achieving strategic goals.

The university (NTNU) is well recognised as a major innovation anchor in the county and works well across a number of sectors with both the off shore industries as well as businesses located in the city of Trondheim and high level skills provision is reflected in this. However, as has been recognised by the hosts prior to the peer review, the interaction between the university and SMEs in towns outside of Trondheim is somewhat lacking. There appears to be no incentive for the university to work outside of its immediate catchment area, and it is also possible that the university, whilst providing excellent innovation services at a high level, may not understand some of the more basis needs that SMEs have in the wider region.

Throughout the Peer Review, the team noticed a lack of available statistics and analysis of them. The team did not see evidence of statistics related to potential growth areas or the need to provide the skills that will be required in the coming years to meet the demands of specific growth sectors.

Whilst unemployment is low, we also know that the number of people not in work and living on some form of state benefit is high, reducing the actual employment/activity rate. It is not clear how many people on some kind of benefit would actually like to work, or what systems there are in place to help them.

Many people are receiving benefits and maybe some of these people could be re-trained more effectively into new careers as there seemed to be lack of skilled labour. There do not appear to be any adult education programmes of significant proportions.

(b) Recommendations

Reassess effectiveness of existing systems

There is scope to reassess triple helix connections, in particular to ensure that all three sectors understand their role in delivering effective interaction and intervention, and that this is also effective at the local level as well as at the core of the county in Trondheim.

Extend existing good practice into other areas

This may require the examination of the potential for the inclusion of incentives for the university to encourage greater collaboration in outer regions. This could include
payment incentives by examining funding models for provision, or setting targets for engagement with SMEs outside of Trondheim.

This review of existing interaction could also be an opportunity to look at the potential for widening the scope of university SME engagement beyond high level, high tech collaboration, to include broader understanding of the needs of SMEs at all levels to encourage innovation at all levels, not only the top.

**Knowing where you are now and future planning**

There is a great deal of scope to make better use of statistics to enable the key stakeholders to look ahead to the future, identifying skills needs and sector growth. In order to effectively do this, statistics must not only be collected, but also used to effectively identify current and future needs.

Consider existing skills gaps and the possibility of an effective universal programme for adult learning and retraining.

**Look outwards**

There is clearly a vast resource base of natural assets in the county as well as a well educated potential labour force. Innovation could also be brought about by examining and encouraging the potential for greater inward investment. The county should consider designing an inward investment strategy that can go some way to maximising job creation and opportunities for career progression making use of the assets and resources it has available.

Bringing in people from outside with different approaches as well as drawing on the opportunities to make greater use of the potential diversity already in the region will also bring about potential increases in innovation. Embracing diversity within the different strategies will go some way to encouraging greater innovation. This may be reflected in any future Employment Strategy which can encourage the skills of people from outside the county, migrants, existing BME communities, women etc.

In addition, it is recommended that the stakeholders examine the potential for developing and promoting a wider range of retraining provision, adult education and other work based learning to increase employment rate and unlock potential where it may currently be under utilised. This includes examining and providing for the training needs of recent migrants who may have more skills that require language provision to make best use of them.

It is also recommended that the county prepares for 2014 and the new range of transnational European Programmes which could be examined for additional opportunities to give people in education, training and employment, opportunities for studying or working abroad, and also look at how this could bring in new ideas by finding
SMEs, colleges and schools that are also able to exchange people to further stimulate new thinking and application of new knowledge.

Links

Manchester Metropolitan University Centre for Enterprise:

http://www.mmucfe.co.uk/
Section 4: Innovative Environment

(a) Key Findings

The key findings related to innovation environment may be summarized to the following observations:

Strong innovation anchors and knowledge base for the development

The panel was impressed with the overall quality and diversity of the South Trøndelag innovation ecosystem. The region possesses very strong innovation anchors i.e. Norwegian University of Science and Technology, SINTEFF and South Trøndelag University College. The institutes of higher education form a continuous source of knowledge and skilled workforce for the region’s economy.

The key industries of the region also have R&D units located in the area and employ a large number of research personnel. All the major national funding agencies (The Research Council of Norway, Innovation Norway and SIWA) actively cooperate on innovation in the region.

A strong tradition of triple helix (TH) interaction.

The key players have a strong tradition of triple helix interaction which is supported by a wide range of financial and strategic steering instruments and collaborative means. The region has also clearly identified its key industries and is active in developing and diversifying regions’ economic structure.

The public administration is involved at both strategic and practical levels in activating collaboration and partnerships between the industry and universities. On the other hand, there seems to be confusion between actors of their role and tasks in implementing different strategies and some service structures of boosting new business creation overlap.

University – industry collaboration

There seems to be strong research collaboration between the large scale industry of the region and SINTEFF and NTNU, which is encouraged by tax scheme and public funding. However, the linkages between research organisations and SME’s seem to be weak and the local small SME’s don’t invest in research and innovation.

Active cluster collaboration

The key clusters are active and provide a platform for collaboration. The approach to company interaction and especially to research collaboration seems to differ between different clusters. akvARENA’s work is a good example of successful research collaboration. Systematic and continuous joint cluster based research planning together with university researchers, could activate the collaboration on both sides even further and thus lead to new breakthrough innovations.

Strong development services that are activating innovativeness and supporting companies and start-ups in the region
Local business garden network together with the incubators provide an extensive network of support to the whole region. Especially the Business garden network is impressive and widespread. The model seems to be well adjusted to cater the scattered settlement of Trøndelag.

The tasks of the business gardens are diverse, reaching from business support to marketing. No strong regional steering or support seems to be in place for the setting the tasks and organising the work of the business gardens. The driving force seems to be missing. It can be that the start of the business garden program is still too close, for which the steering hasn’t developed yet. Lack of steering and monitoring might lead to inefficiency and to poor quality of service.

The funding of the business gardens comes combined to the results of the work performed and the funding from clients. The funding logic might prevent some SME’s to get counselling or it might lead to unnecessary counselling relations.

The extensive network provides services locally and in the vicinity of the clients. Locality, however, has its downside. The number of counsellors doesn’t exceed critical mass for an efficient and staple organisation of services. Through joining local services into larger entities, service processes might become more efficient and provide room for professional specialisation also for the coaching personnel.

Business gardens could also benefit from collaboration with incubators and their expertise at least in promoting innovativeness within SME’s

Growing number of start-ups in the Trondheim region

According to Impello analysis the economic structure seem to be diversifying as new start-ups emerge from the knowledge generated by the innovation anchors. Especially ICT sector seem to grow and become as one of the future major employer. The number of research based start-ups from NTNU seems to be above Nordic averages within universities of technology, but within international context there is still room for improvement.

Lack of data collection, foresight tools and reliable indicators that measure innovation.

There seemed to be no systematic data collection, analysis and utilisation, which would also be good tools for the foresight. There should be continuous analysis of economic structure and the actions should be based on metrics and scientific knowledge.

Lack of entrepreneurial spirit.

Lack of entrepreneurial spirit is due to the low unemployment rate and availability of good, well-paid jobs. There is no willingness to take risks related to entrepreneurship.

(b) Recommendations

ORCHESTRATE THE INNOVATION SYSTEM

1. Sharpen the regional strategy and division of labor between different actors.

Describe publicly the whole regional innovation ecosystem and its key players. What do you want the actors to achieve?
Define the key actors, their roles and mutual relations

Define and describe the services provided by different actors through customers lenses

**Develop a reliable set of indicators and foresight tools** to follow the knowledge based development in the region and to provide well-grounded scenarios for the future trends including economic development, technological trajectories and societal transformations

The indicators are linked to the status of the innovation ecosystem. For example Tampere (Finland) is shifting from developing clusters into more open innovation system including multidisciplinary innovation platforms as well as user driven and demand driven innovation. Council of Tampere Region activates the adoption of new models of innovation activity, creates European and global innovation policy networks and promotes the role innovation in the regional development and decision making.

Anticipating future developments and trends has become an important aspect in planning regional development. For example in Tampere region (Finland) an effort has been made to strengthen the co-operation of different actors in foresight and to create a common context for this work. It has been branded “Pilkahdus” (“Glimmer”). Regional foresight also utilizes benchmarking practices with other regions, and currently there is joint project with five neighboring regions to identify, test and distribute successful foresight practices.

A fairly good example of traditional approach is the description of the indicator system of Rhode Island.

**Links:**

**Glimmer**, the foresight portal (currently only in Finnish)
http://www.pilkahdus.fi/

**Rhode Island indicator system:**
http://stac.ri.gov/assets/509/Benchmarking_the_RI_Knowledge_Economy_2012_executive_summary.pdf

**Support emerging industry own collaboration and co-existence.**

Cluster collaboration is based on existing regional strengths and usually involves large industries. Regional support should also cater for collaboration of emerging industries (such as ICT) that usually consist of SME’s. A good practice from the region was found in Røros, where the municipality is activating informal networks and collaboration of companies. Municipality gathered together companies to enable marketing course and marketing actions, that wouldn’t be possible for an individual SME.

An example of the cluster development outside organized clusters could be “Manse Games” from Tampere, Finland. Manse Games is a regional support project aiming to speed up the game industry. Tampere is acknowledged in having world class talent in mobile games development and rapidly advancing skills for PC and console development. Currently, over 100 game industry experts of different fields are employed by 25 game
companies in Tampere. Manse Games aims to be an active coach for new game start-ups, game companies seeking growth, industry related companies and even individuals who are considering game industry entrepreneurship. Industry specialized know-how, contacts and supported services are offered for the promotion of the growing companies. The goal is to speed up the growth of the game companies in the Tampere region and to bring up new companies by developing the area as a profitable and fertile ground for the growth of game industry.

Links:

Manse Games: [http://mansegames.fi/](http://mansegames.fi/)
Manchester Science Parks: [www.mspl.co.uk](http://www.mspl.co.uk)

UNLEASH THE CREATIVITY AND INNOVATIVENESS OF PEOPLE AND BUSINESS

Look at co-creation models and facilities and upgrade the incubators to business creating start-up accelerators.

Set business parks clearly defined goals (monitoring number of created firms and jobs with continuous sparring).

There are several examples how to set-up this kind of process from Finland (New Factory in Tampere region, or Aalto Venture Garage/Start-up Sauna in Helsinki) or to Silicon Valley (Y-Combinator) that all are rather differently organized, but still have a similar goal to nourish the growth of start-ups and young firms.

For example, New Factory in Tampere (Finland) is an innovation and business incubation. It is based on a concept of open, diversified, and communal modes of operation. Practical innovations and pilots generate not only wellbeing and vitality in the present, but business and jobs for the future. The New Factory project platform comprises operations that enhance innovation activities and, moreover, the acceleration of the business those activities create. The objective is to develop real-life products and services through cost-effective means, to improve outdated processes, and to respond agilely to developments in different industry branches through an open and social approach to innovation.

Links:

The Landing, Media City: [www.thelanding.org.uk/](http://www.thelanding.org.uk/)
Innospace: [www.innospace.co.uk](http://www.innospace.co.uk)
Create practices that enable local firms to connect better to research organisations. Especially SME’s are difficult to get motivated to connect to universities knowledge. SME’s, however, possess a lot of potential to develop new services and products and grow. SME’s are also usually very flexible to adapt to market changes. Supporting them is vital for the economy.

Examine Innovation Vouchers, which encourage SME’s to collaborate with research organisations. Innovation vouchers, are innovation instruments taking the form of a coupon, which entitles the owner to approach a knowledge institution with low costs.

For instance, in Manchester (UK), there is an innovation voucher scheme, however there are also others across the UK and rest of Europe which operate in different ways and offer different types of support.

Identify key mechanisms and people within university to address collaboration. Collaboration needs willingness also within university and local engagement has to have recognition from top management. Matchmaking between researchers and SME’s can also be one of university’s tasks. A good example of matchmaking as task of a university can be found in Aalborg, Denmark.

Links:

http://www.mmucfe.co.uk/

Aalborg matchmaking: http://www.en.match.aau.dk/about-aau-matchmaking/
Section 5: Partnership

(a) Key Findings

Concerning the issues related to partnerships, the review disclosed that the county of Sor Trondelag has:

- A tradition of collaboration with Universities and centres for R & D and HEIs.
- Good partnerships and linkages associated with developing networks for entrepreneurship and innovation, including good support for financing of these networks.
- A willingness to collaborate amongst the various stakeholders with an emphasis on sectors involving strong technical competencies.

On the other hand the peer review gave the impression that the county of Sor Trondelag in the above is limited by the University unwillingness to engage in the wider region and that the impression is that it is not bridging with SMEs in outlaying areas and that it may not understand the wider needs of smaller SMEs. R & D institutions are underutilised for innovation.

It was unclear to the review team as to how the University identified potential high growth businesses, how they then developed links and opened doors with entrepreneurial business owners.

The peer review also gave the impression of some duplication of provision of business support services, a complex delivery structure / framework, a lack of a formalised overarching partnership with shared responsibility, together with a limited amount of private sector investment i.e. business angels / venture capital.

Furthermore the review also indicated a lack of systematic data collection, analysis and utilisation – a key element in locally determining lifestyle SMEs, identifying local SMEs with genuine growth aspirations and potential, as well as providing the ability to predict future growth sectors and trends. The review team were unable to see data on the number of businesses situated in the centre of Trondheim and those in the outer areas with sector, turnover, number of employees information.

It appears that a lot of individuals and some smaller SMEs are not as innovative as they could be, and the team concluded that this could in part be due to the high employment factor dissuading people from taking risks as entrepreneurs. Certainly it would appear that the over reliance on the oil industry, with petroleum revenue masking innovation needs, and coupled with a strong economy is not stimulating the need to look at innovation in products and services, or indeed engender an entrepreneurial mindset.

In conclusion the strength of the role of that the county authority of Sor Trondelag plays in the various partnerships appeared to be mainly a strategic one in management, policy and funding. It did not appear to be acting in a hands-on role as the engine room driving forward new local initiatives / projects (which could be developed) to boost employment and innovation based jobs.
The peer review team identified future partnership opportunities to:

- Build on the existing University R & D to increase the number of spin-offs.
- Add incentives to University provision to better engage with SMEs.

1. **Need of formalised partnership among all the actors, including the county.**

The review disclosed that the county of Sor Trøndelag has:

- A good tradition of collaboration with Universities and centres for R & D and HEIs.
- Good partnerships and linkages associated with developing networks for entrepreneurship and innovation, including good support for financing of these networks.
- A willingness to collaborate amongst the various stakeholders with an emphasis on sectors involving strong technical competencies.

The peer review gave the impression of some duplication of provision of business support services, a complex delivery structure / framework, a lack of a formalised overarching partnership with shared responsibility, together with a limited amount of private sector investment i.e. business angels / venture capital.

Special attention must be paid to the county as an important part of the region rather than only the capital, from a bottom-up perspective considering the municipalities needs and points of view. It seems there is an evident centralized pole in Trondheim, but the lack of involvement in rural areas is far from a balanced situation.

There is a potential to improve synergy between different municipalities that are working independently of the others despite having similar needs.

2. **Low level of relationship between R&D institutions and companies, what means under use by the industry**

We identified excellent R&D performance over the years based on a strong tradition and high level knowledge, but this potential is not used by all industry at the same level, so, somehow this gap between them makes the R & D efforts disproportionate in the same scale in the business sector.

It is widely acknowledged that the over reliance on the oil industry and strong current economy makes the business sector less inclined to seek continuous innovation.

3. **The relationships by the University are focused on the internationalization and big companies instead partnership with SME’s**

The county of Sor Trøndelag is limited by the University’s unwillingness to engage in the wider region and that the impression is that it is not bridging with SMEs in outlaying
areas and that it may not understand the wider needs of smaller SMEs. R & D institutions are underutilised for innovation.

It was unclear to the review team as to how the University identified potential high growth businesses, how they then developed links and opened doors with entrepreneurial business owners.

According to the information provided by some interviews, although there is a tradition of collaboration with the University and strong technological competences, the relationship with the University is not easy for the SME’s and entrepreneurs, as the University appears to be more focused on internationalisation rather than in engaging with SMEs more generally in the region.

Also, due to a lack of connection between education centres and companies, there is a mismatch between qualification and skills needed in the job market and education and training programmes. As a result there are a significant number of vacancies due to the lack of a relevantly skilled workforce. Currently this situation is a problem of labour supply due to low unemployment, but the cost to address this issue of identifying future labour trends will increase without addressing this issue now.

4. Lack of systematic data collection, analysis and utilisation

The review indicated a lack of systematic data collection, analysis and utilisation – a key element in locally determining lifestyle SMEs, identifying local SMEs with genuine growth aspirations and potential, as well as providing the ability to predict future growth sectors and trends. The review team were unable to see data on the number of businesses situated in the centre of Trondheim and those in the outer areas with sector, turnover, number of employees information.

It appears that a lot of individuals and some smaller SMEs are not as innovative as they could be, and the team concluded that this could in part be due to the high employment factor dissuading people from taking risks as entrepreneurs. Certainly it would appear that the over reliance on the oil industry, with petroleum revenue masking innovation needs, and coupled with a strong economy is not stimulating the need to look at innovation in products and services, or indeed engender an entrepreneurial mindset.

5. Lack of stronger role by Regional Government in the relationship among University-R&D-Business

The strength of the role that the county authority of Sor Trondelag plays in the various partnerships appeared to be mainly a strategic one in management, policy and funding. It did not appear to be acting in a hands-on role as the engine room driving forward new local initiatives / projects (which could be developed) to boost employment and innovation based jobs.

The Regional Government could play a more active and important role in terms of partnership, linking the public and private actors as the triple helix: University, R&D
institutions and Business, leading this process for gathering different needs and expectations, and creating the conditions for long term links and closer relationship.

However, the responsibility must be shared by all the actors in this field through a pro-active role in terms of agreed commitments and common actions for visualize future sector growth and trends.

An international point of view must be considered too, apart from inside the region, a look to the external trends must also be considered.

6. Lack of partnership in the field of green Economy

Even though there is concern, there are some good examples of environmental friendly actions and activities taking place, for example at the Scandinavian Business Seating using recycled raw materials, these appear to be isolated actions. The heating system are based on electricity coming from hydraulic sources, but there is still a lack of deeper awareness raising at all levels for using alternative sources of green energy as renewable, efficient equipment and saving energy in general terms.

7. Weak partnership in the Tourism sector.

Despite the few exceptions in locations visited such as Roros, there is concern about a lack of a holistic or general Tourism Strategy for the region, despite the huge potential related to the exceptional nature of the natural resources in the area.

8. Future partnership opportunities

The peer review team identified future partnership opportunities to:

- Build on the existing University R & D to increase the number of spin-offs.
- Add incentives to University provision to better engage with SMEs.
- Focus on potential high growth sectors and SMEs with aspirations to grow.
- Develop partnership supply chains in green economy sector in rural areas.
- Establish a regional tourism strategy.
- Provide digital solutions to remote areas.
- Look to improve innovation rates in non-traditional areas / sectors.

(b) Recommendations

1. Build up of formalised partnerships: public and private.
Different formal agreements with a long term vision must be set up between public sector, private sector and interrelation between both of them: public-private, for helping the achievement of strategic goals, and establish a baseline for key performance indicators in order to monitor the partnership activity.

In terms of public partnership, the voice of rural municipalities around the county must be taken into account from a bottom-up approach, in a kind of “needs detection” for spreading the R&D, therefore the innovation across the whole county. An example of those needs could be for instance the infrastructure refurbish like the roads across the whole county, this task should be led by the Sor Trøndelag Government to forward in case to those public bodies with competences in each field.

2. **Practical and real application of R&D in the companies: Transfer Agency.**

Concerning the private sector, the focus should be in the practical transfer of knowledge towards the companies, mainly SMEs, for using the high potential of innovation the society owns, not only innovation applied to the processes, but to the products themselves as a way to gain competitiveness.

This action should be taken by some kind of Transfer Agency, as there is evidence that there is a gap between the R&D knowledge and the companies. There are several organizations dealing with innovation, but despite working well individually, is not clear enough how they work together to maximise their effectiveness. Perhaps consideration should be given to a simplification process within the different bodies related to innovation for better use of the resources available, bearing in mind the progressive reduction of resources in the coming decades.

However it should also be highlighted that the transfer of knowledge relates not only to pure innovation, which is one of the goals, but also to innovative approaches.

3. **Identify full range of business support systems, agency provision for SMEs**

Large businesses can afford to invest in R & D on their own behalf and finance it but the team observed that the biggest gap in R & D is with the smaller SMEs. It would appear that they don’t really understand it and the owners are too busy running their businesses on a daily basis to realise the potential benefits that innovation may give their business a more competitive edge.

The review team observed that the existing providers of business support services in Sor Trøndelag were operating very effectively in their own right but it was felt that the overall picture on current provision appeared somewhat fragmented and possibly confusing. The marketplace would benefit from some clarification of the current provision available and a recommendation would be to re-look at pooling resources and publishing a more visible matrix of the full range of business support systems including available funding streams. A road map if you like, simple to understand and easy to refer to.*
*See the Tameside Business Family (Mini-Europe good practice now managed by the Tameside Enterprise Partnership) in Greater Manchester.

Recommendation is that the key to more effective engagement with new start-ups, spin-offs and established SMEs would be to firstly identify those businesses which have genuine passion and aspiration to grow....gazelles....then design and deliver hands-on tailored support and funding. Resources should be concentrated on those companies where the greatest economic return will be achieved.*

*Growth Accelerator programme / Winning Pitch*

http://www.winning-pitch.co.uk/

Secondly establish those smaller SMEs and sole traders who have demonstrated limited or potentially no ambition to grow.....lifestyle businesses (who nonetheless play a pivotal role in prosperity of regional and local economy)....and look to introduce a more rounded business support model, including mentoring, to develop a capacity to innovate non-technical products and services alongside the need to keep them in touch with cultural, technological and social change, especially in social media. The capacity for collective learning amongst this section of the business community is paramount with an emphasis on safeguarding jobs.*

*See the Tameside Business Family (Mini Europe)*

http://www.tamesidebusinessfamily.com/

4. Regional government role linking the triple helix: University-R&D-Business

In order to engage a useful and profitable partnership, the Sor Trondelag government should establish and lead a permanent partnership among the key actors as University, R&D institutions and Business sector, but keeping in mind the main goal is to set support systems available for SMEs could apply innovation effectively then gain competitiveness in the internal and international market.

The collaboration of the key stakeholders is the greatest strength of the triple helix in facing the knowledge economy but it appears to be greatly underutilised as a driver for growth in the region.

There is an opportunity to re-examine the effectiveness of the linkages between public, HE and the private sector. The peer review team observed that Sor Trondelag does not appear to have an effective triple helix, even though there is a real willingness by all of the different stakeholders to collaborate. Nevertheless the team felt that all of the building blocks are already in place and what is now needed is an overarching plan to assemble them more effectively at the points of impact.

There needs to be a concerted move to joint ownership and responsibility for strategies and a governance structure put in place. The regional / county authorities need to play a far more active and important role in linking together the actors in the triple helix partnership, identifying champions, strengthening interplay, linkages, collaboration and delivery. It should be at the centre of the wheel and seen to be co-ordinating / facilitating agreed overall aims, objectives, sector focus groups, agreed outcomes, actions plans, and so on and so forth.*
The voice of the rural municipalities and rural business communities in the region must be taken into account, embracing a bottom-up approach in order to promote an enterprising mindset both in business owners and residents alike.

*See the Tameside Business Family model (Mini-Europe good practice now managed by the Tameside Enterprise Partnership) in Greater Manchester.

5. **Significantly strengthen the role of the University in delivery of strategy**

There is a body of research showing that businesses which embrace a collaborative approach with universities grow faster than those that don’t. Where better to find new thinking and ideas than a university – they are packed with ideas and imagination. Unravelling new thinking on SME growth allied to an industry insight into how ‘gazelle’ entrepreneurs behave, think and act is the link to how potent a university and private sector relationship could be in establishing commercial advantage* Working with a university can make a business stand out from the crowd, differentiate their offer / product much more effectively. In an economy where knowledge based companies offer the answer to economic growth it seems obvious that the university should have a bigger role to play in coming up with projects to create jobs and spur growth.

* Growth accelerator programme / Winning Pitch.

The university of Sør Trøndelag appears to be very strong on research but the impression is that it needs to raise its game and strengthen applied research to help stimulate growth and exploit technology, with more effective interventions being targeted at businesses with higher growth potential. The development of science parks * (where interactive companies grow in an inspiring environment) should be considered, attracting clusters of like minded companies working closely to each other who will want to tap into the university high talent reservoir. The result of companies being clustered together in a science park is the way that the university, acting as a transfer agency, will become entwined with industry, with both elements sharing the goal of creating world-beating products.

*Greater Manchester has some good examples of sustainable science parks which could be used to drive this agenda.

Additionally, working with the university is an important consideration for all ambitious entrepreneurs. The questions they appear to be asking are – Who do I speak to? How do I get involved? Where is the front door? The university needs to be more proactive in making it easier for all the ambitious individuals and businesses to be able to open the door to dialogue, evaluation of new ideas, products and processes, without it appearing that it only happens at the centre in Trondheim.

The University has a strong role in providing the labour market with fully qualified people in the technological sector, however it should consider the diversification or adaptation of the degrees offered to meet future and changing sectoral demands.

Some jobs as for example in the health sector have vacancies due to the lack of enough number of skilled workers, therefore an improved the partnership between University
and public and private sector should help to reduce this gap. Closer work with SMEs is needed to effectively supply the skills needed in a changing economy.

6. **Boost of a Green economy, mainly in rural areas.**

Because of the presence of oil in such quantities, energy consumption is not an issue at the moment, but the consequences of the GHG emissions are endless, as climate change evidence suggest. So, in addition to economic reasons, RUE, taking advantage of the renewable energy sources like biomass, environmental reasons should be considered, and it is recommended that the regional economy should be based on a Rational use of Energy, windmills, hydropower, geothermal, obviously in a minor scale solar photovoltaic and solar thermal due to the lack of sunny hours in some parts of the country during some seasons.

The profitable effects that this type of economy could have for rural areas can be amply demonstrated since they have a high added value chain at local level. For example biomass harvest in the forestry industry, logistics, installations, maintenance, etc. – all of these tasks are done locally. The review team saw some good examples of existing environmentally friendly actions i.e. Scandinavian Business Seating using recycled raw materials but, in the main, appeared to be isolated incidences. There appears to be a lack of a deeper awareness raised at all levels to look at the use of alternative sources of green energy taking into account that the oil will run out in 40 to 50 years time.

It should be noted that the EU is targeting the 20-20-20 targets for a more sustainable future. This means to get 20% the use of renewable sources over the energy demand, reducing 20% the GHG emissions and increasing 20% the energy efficiency. Even though Norway is not part of the EU this is still a clearly defined trend in the global economy and boosting a green economy is one way to guarantee a Norwegian future alongside existing environmental initiatives.*

Link to EU climate and energy package.

The university could perhaps look to adapt their education programmes to mirror the trends in European and other developed countries, where some of the degree courses subscribed to are those related to environmental issues, green economy and environmental sustainability.

http://www.enworks.com/

7. **Committee of Regional Tourism and Tourism Strategy**

Sor Trøndelag has a huge potential in terms of tourism, not only inside tourism for Norwegians, just international tourism, based mainly in breathtaking natural resources fiords, landscapes, hills, but thanks to the cultural resources too: Nidaros Cathedral, World Heritage Sites like Roros, Salmon fishing activities, Reindeer activities around the 8 seasons cycle among others and including the excellent gastronomy in the region.
A good example could be the creation of a Tourism Committee, to include all the key stakeholders in this sector including the regional authority, municipalities, hostelry owners, guided visit associations, gastronomy association, delicatessen agro food producers, facilities owners etc. This would allow for an innovative approach instead of pure innovation which could be achieved in terms of a long term vision as it is: “selling experiences”, rather than only isolated products, so offering to the market a complete range of integrated packages with outdoor activities depending on the visitor profile.

Obviously that long term vision should keep in mind a balanced situation between the tourist needs and the destination resources for a real sustainable tourism without damaging the resources for the future generations.

From the presentations made to the peer review team an impression was formed that the infrastructure needs of the rural areas, although equally important, were somewhat different from and being overshadowed by the needs at the centre in Trondheim. It is felt that again a bottom-up perspective needs to be adopted to develop these areas which have many similar needs and issues to address.

It was particularly evident from the few locations visited by the team with the exception of Roros who appear to have established their own local tourism plan, that there is no overarching or co-ordinated regional tourism strategy which brings together all of the various sized individual municipalities.

Municipalities need to be drawn together, work together, share best practice, ideas, etc. The sum of the whole will be greater than the sum of the parts.

Sør Trøndelag could quite easily become an important tourism destination, both internally in Norway and internationally, if the proper actions are put in place. Breathtaking fiords, landscapes, cultural resources, Nidaros Cathedral, World Heritage sites like Roros, salmon fishing, reindeer activities around eight season cycle and excellent gastronomy in the region.

There is a definite need to establish a regional tourism strategy involving key stakeholders, county authority, municipalities, hostelry owners, guided visit associations, gastronomy associations, delicatessen agrofood producers, facilities owners, etc., who together with an innovative approach could establish selling experiences rather than just destinations. Offer the national and international markets a complete and comprehensive range of packages including outdoor activity resources to embrace real sustainable tourism without damaging the natural resources for future generations.

8. **Examine a vision for International partnerships**

Despite not being a member of the European Union and being eligible for Structural Funds, Norway is eligible for a large number of EU funded programmes of a transnational nature that can assist in developing a range of skills and bring innovation. For example, in terms of lifelong learning, the new ‘Erasmus for All’ (working title) will commence in 2014 and will provide significant opportunities for learning over 7 years. Any public or private organisation actively involved in these areas can apply for funding through the *Erasmus for All* program. For example, schools, Higher Education, Further Education, adult
education, youth organisations, charities, SMEs. A range of different types of projects will be funded through the new programme.

Erasmus for All will have three Key Actions:

Key Action 1: Learning Mobility of Individuals (students, adult learners, schools, apprentices, SMEs and entrepreneurs, volunteers and staff of various types of organisations)
Key Action 2: Co-operation for Innovation and Good Practices
Key Action 3: Support for Policy Reform

Each Key Action will be open to organisations active in education, training and youth work and will provide opportunities for staff, learners and beneficiaries to get involved. Each Action will support both formal and non-formal learning experiences and activities.

It is recommended that Sor Trøndelag starts to examine the potential from this fund, and others that can assist in bringing SMEs, HEIs, public bodies, voluntary sector organisations and people together to stimulate new ideas and bring about innovation at all levels.
Section 6: Sustainability of the jobs created by the innovative sectors

(a) Key Findings

Unemployment in South-Trøndelag is clearly exceptionally low in the current economic climate however this does not mean that there are not problems that are more specific to the area and which could be addressed in relation to encouraging and assisting people back into work. The activity rate, the percentage of those in work and actively seeking work is 66-72% but there is also an increasing number of people on passive benefits (sickness leave, work assessment allowance, disability as well as pensions) mainly amongst people with no or low qualifications, living at rural areas, having low incomes. This is potentially an issue of great concern for the future as the labour force is not able to provide for a growing and ageing population.

Growth opportunities appear to exist for those within 1 hour’s commute into Trondheim, outside of that, despite the benefits of lower costs outside of that distance in more rural and remote areas, there is little opportunity to participate in the economic growth success being experienced at the core, in Trondheim. This also however means that there is great potential for innovation beyond one hour commutes, and linkage to areas where unemployment is higher than the county average.

One example of a successful industry operating beyond this distance was locally produced food made and branded with the Roros name. Consideration needs however to also be given in these areas to the creation of jobs for local people of all ages, and gender, education, work life balance and environmental considerations in relation to local employment creation.

There is a lack of labour force in some areas which could cause problems in the future, even with innovation, for example it could be a significant problem that there are insufficient elementary school teachers. This shortage of supply of teachers and high demand could be met by utilising the skills of migrants to the area, however, it became clear that because of strict regulations in Norway it is not always possible for highly qualified people to work in their profession (and there is also a lack of language assistance and other training to convert skills).

To some extent a well-functioning triple-helix seems to be missing at South-Trøndelag, which can be the result of the many organisations, which are operating in parallel in the same work area. We have seen that there are potential overlaps in provision between SINTEF and Innovation Norway, or NIT and NHO. Some further consideration of how this works in practice is required to ensure greater sustainability of jobs (see partnership).

The region’s dependency on oil and gas industry is evident, although the potential for volatility in this industry as the world looks in greater numbers to renewable energy should cause significant concern.

Peers identified that NOK is a strong currency, which can cause problems for exporters and for the tourist-related industries which are the potential driving force behind further employment creation and growth in the rural areas.
(b) Recommendations

1. Analyse

The sustainability of jobs will be boosted by understanding of what is happening now, and what will or could happen in the future. Statistical analysis is key to this. We recommend that the county places more emphasis on statistical and data analysis to show greater understanding of future trends across all sectors, not only ICT where data was accessible. This will be critical to effectively achieving any outputs outlined in regional and sub-regional strategies and action plans. The lack of jobs in Sor Trondelag is not the problem as we have seen, but the sustainability of the job market itself.

In order to enable greater and better data collection and statistical analysis, better cooperation of all the stakeholders involved with innovation is required to improve this. Re-examining the effectiveness of the triple-helix base will assist in this process. Cooperation and sharing roles can assist in doing this better.

The high reliance on oil and gas industry investments could cause problems in the near future if income from this sector decreases. Analysis of the future of this sector and possible substitutions is crucial to enable an effective assessment of the sustainability of the jobs that are currently in place.

2. Use the results of the analysis

Limited information on the employment strategy was available before and during the peer review. It is promising that there is a partnership between state and municipalities and Norwegian Labour and Welfare Administration has a good vision, fresh data and operating system for surveys.

If the employment strategy is linked to future growth, diversification of employment sectors and geographic areas more resources can be concentrated on the most important or most underdeveloped ones. For example in Hungary people with many disadvantages (location, sex, age, gender, level of education, ethnicity etc.) can apply for trainings for free on the one hand and employers get subsidies if they employ such a person. It is part of the New Széchenyi Plan of Hungary (http://ujszechenyiterv.gov.hu/egyutt-fejlodunk-2012-tavaszi-reklamfilm-english-subtitles) which can be a good practice for choosing priority areas for multidisciplinary development.

It is very important to improve or make clear potential for career progression and prediction linked to development of skills.

It is also important to understand the motivation behind not being committed to entrepreneurship, even in rural areas. Analysis can give answers to be able to assess how people think and what factors should be changed to sustain and increase the diversification of jobs. This should be wider consultation to include existing business support providers, SMEs, colleges, schools, people themselves and other organisations operating in the areas locally.
3. Diversify and connect

In a region where innovation is centralised in cities (like Trondheim in South-Trøndelag) prioritisation and target support on particular sectors and geographic areas is a key action to take. It is recommended to transfer the existing innovative approach in Trondheim out to rural areas – not only pure innovation, for which NTNU is the key player, but also amongst politicians and officers working in the municipalities and other organisations operating in the areas.

In rural areas the sectors providing innovation are possibly different from those in cities. A good practice was Rorosmat, for which we can suggest internationalization as a next step. Generally in rural areas the first step is to identify comparative advantages based on the results of data analysis, then support the entrepreneurs by financing and creation of networks, clusters, incubators and after the spin-off period, internationalisation can also be supported.

Tourism seemed to be a breakthrough point of rural areas which can be combined with gastro, or culture-routes for example coloured with different outdoor activities for which accommodation capacities should be developed and increased.

As South-Trøndelag is member of the S3 Platform all the above activities would be useful to be linked to Smart Specialisation Strategy.

As it was mentioned, peers had doubts in the long-run sustainability of oil and gas sector, leading to our recommendation to decrease the dependency of incomes and investments in this sector. Instead of that more efforts should be given to sustainable and green energy in the future. In our opinion even innovation can have a boost with this slight move of efforts.

Some thought should be given to designing new curricula at NTNU or to establishing innovative jobs in rural areas where action by NTNU can be the innovation anchor ‘to move’. Sometimes different levels and organisations (state, municipality, chambers, NAV, university, SINTEF, Innovation Norway, NHO etc.) can support entrepreneurship by multidisciplinary trainings or tenders/applications for innovative entrepreneurs, who can be the base of knowledge economy.

http://www.nfu.hu/palyazatok_a_fiatalok_vallalkozova_valasanak_tamogatasa_erdekeben

Training and support for people and organisation that are ready to establish workplaces for innovative people are crucial in which NTNU’s flexibility in organising distance or remote courses can be a great help.

Of course all innovation anchors – SINTEF, NAV, NHO, IN, NIT – should cooperate with municipalities, enterprises, companies and NTNU in this long work.

By increasing the number of investments, or better targeting them, in rural areas, new innovative approaches can give a boost to change the entrepreneurial thinking of people. Many examples showed that Norway is a knowledge base, but sometimes they think business too risky. This attitude is strengthened also by the fact that there is an
abundance of jobs in a number of large public administrations, which assures secure income, but reduces the collective entrepreneurial mindset.

Section 7: Conclusions

The region has a good network of partnerships and organisations involved in stimulating innovation and business growth, with the university and its existing activities being central to these activities. The region and the city of Trondheim has a good critical mass of population to facilitate a good return on the investment taking place in terms of involvement of all stakeholders. The region also has significant assets in terms of natural resources, including oil, fish and natural beauty alongside a democratically elected regional governance structure which feeds into the national structures as well as the local ones. In addition, despite this, the region and the country is aware of the difference that oil makes to its revenues and overall GDP and attempts to bring some reality into its situation by using two sets of data, one with oil and one excluding oil,

The removal of oil revenues and the benefits it currently brings highlights a number of issues, and also dovetails well into the desired situation in Sor Trondelag, that is, to think beyond the oil and consider the future sustainability of the region and sub region.

Overall this is a good starting position for future improvements, and peers have identified a number of ways in which the county can make some progress in this area.

A number of recommendations will help the region improve. These include a more focused tourism strategy for the region, examining skills gaps, better use of data to project growth and current and future skills needs and linking this data to the provision of retraining or adult learning programmes as well as considering language training for economic migrants. Tying in the university and other stakeholders into possible targets, or some other forms of incentives should also be considered to widen the current activities of the existing key players – not least to extend their involvement beyond the core city centre area of Trondheim. This may also go some way to reducing the potential duplication of activity being delivered in some areas. It is also proposed that the stakeholders widen their existing good work with business to include more general support for SMEs. It should also be remembered that the potential for inward investment could also bring new ideas and innovation into the region and some consideration might be given to a strategy to encourage this. Overall however, peers felt that the potential for untapped labour and skills amongst the high levels of people on benefit may be being overlooked as a possible, at least part, solution to the skills gaps that partners felt existed.

The Peer Review Team however felt that there was a willingness in the region to improve and found stakeholders willing to listen to recommendations which will enable the region to continue to improve. Peers are also extremely willing to help the region with any follow up that can be helpful.