

GREECO

Territorial Potentials for a Greener Economy

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Case Study

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Contents

1	Executive summary	5
2	General Description of the Region	10
2.1	Geography	10
2.2	State of infrastructure	12
2.3	Demography	13
2.4	Administrative structure	14
2.5	Governance	15
3	Regional Economy	17
3.1	Overall economy of the region	17
3.2	Description of the selected key sectors	22
3.2.1	Agriculture	22
3.2.2	Forestry	23
3.2.3	Transport	23
3.2.4	Tourism	23
3.3	Interrelations between the sectors	24
4	Performance of the key sectors of green economy – How green is the economy?	26
4.1	Agriculture	27
4.2	Forestry	30
4.3	Transport	35
4.4	Tourism	41
5	Key milestones	44
6	Drivers, barriers and enabling conditions	46
6.1	External drivers	46
6.2	Internal drivers: policies, institutions, financing	46
6.2.1	Insights on efficiency of EU policies in the region	46
6.2.2	Insights on efficiency of national, regional and local policies – multi-level governance	47
6.2.3	Development ambition of the region concerning green economy	49
6.2.4	Role of Structural and cohesion policy funds in the region	50
6.2.5	Role of regional and local funding	51
6.2.6	Role of economic instruments	51
6.2.7	Others: voluntary schemes; innovative financing mechanisms; green public procurement	51
6.3	Description of problems and barriers encountered within sectors	53
7	Territorial conflicts	55
7.1	Conflicts of interest between sectors	55
7.2	Conflicts within sectors	55
8	Assessment of the regions' potential to develop green economy in the future	56
8.1	Distance to target/best performers/technical potential	56
8.2	Potential for GVA increase and job creation	60
8.3	Interaction between external and internal drivers in view of realizing the regional potential	62
8.4	Conclusions	62
9	The Road ahead and conclusions	63
9.1	Classification of the region according to GREECO regional typologies	63
9.2	Road ahead and policy needs as seen by local stakeholders	63
9.3	Road ahead and policy needs as seen by GREECO	64
9.4	Main policy recommendations	65
9.5	Transferability	66
10	References	68
11	Appendices	72

Figures

Figure 1 Amount of employees per GREECO sector in Jämtland (Statistics Sweden 2012).....	19
Figure 2 Share of each GREECO sector of the total labour force in Jämtland (Statistics Sweden 2012).....	19
Figure 3 Share of employed in tourism related trades. Source: Regionfakta/Statistics Sweden.....	24
Figure 4 Share of organically cultivated arable land and share of certified organically cultivated land (Source: The Swedish Environmental Protection Agency, 2013).....	28
Figure 5 The total area of pasture land with agri-environmental payments (Source: The Swedish Environmental Protection Agency, 2013).....	29
Figure 6 Share of eco-certified animals (pigs, lambs, other cattle and milk cows) (Source: The Swedish Environmental Protection Agency, 2013).....	29
Figure 7 The increase of habitat protection areas (hectares of productive forest land) (Source: The Swedish Environmental Protection Agency 2013a).....	31
Figure 8 The increase in areas with nature conservation agreements (naturvårdsavtal) (hectares of productive forest land) (Source: Swedish Environmental Protection Agency 2013a).....	33
Figure 9 Area of productive forest land in protected as nature reserves (Source: Swedish Environmental Protection Agency 2013a).....	33
Figure 10 Emissions per sector (energy sector, industrial processes, transport, agriculture, waste) (Source: Swedish Environmental Protection Agency 2013a).....	36
Figure 11 Driving distance in the county (10 km) per inhabitant per year in Jämtland ("Körsträckor län") and in Sweden ("Körsträckor Sverige") (Source: Swedish Environmental Protection Agency 2013a).....	37
Figure 12 The amount of benzene in the air (in Jämtland and in Sweden in relation to the target) (Source: The Swedish Environmental Protection Agency 2013a).....	39
Figure 13 Share of municipalities' answers to a survey on whether they have programmes for sustainable transport (fields: no, no but a programme is under construction, yes covering parts of the municipality, yes covering the entire municipality).....	40
Figure 14 Exploited mountain area in 2004 and 2008 (built-up areas, scooter tracks, wind mills, roads).....	41
Figure 15 Biogas potential per county (Source: Biogasportalen).....	57

Maps

Map 1 Jämtland and Sweden. Source: Regionfakta.....	5
Map 2 Jämtland and Sweden. Source: Regionfakta.....	10
Map 3 Municipalities in Jämtland. Source: Regionfakta.....	11
Map 4 Main roads and traffic flows (vehicles per day). Source: Regionfakta/the Swedish Transport Agency.....	12
Map 5 Population change 1987-2012 in Jämtland. Source: Regionfakta/Statistics Sweden.....	14
Map 6 Share of unemployed persons and persons taking part of labour market measures (Source: Regionfakta/Swedish Employment Agency).....	18
Map 7 The share of energy sector of the regional product. (Source: Regionfakta/Statistics Sweden).....	21

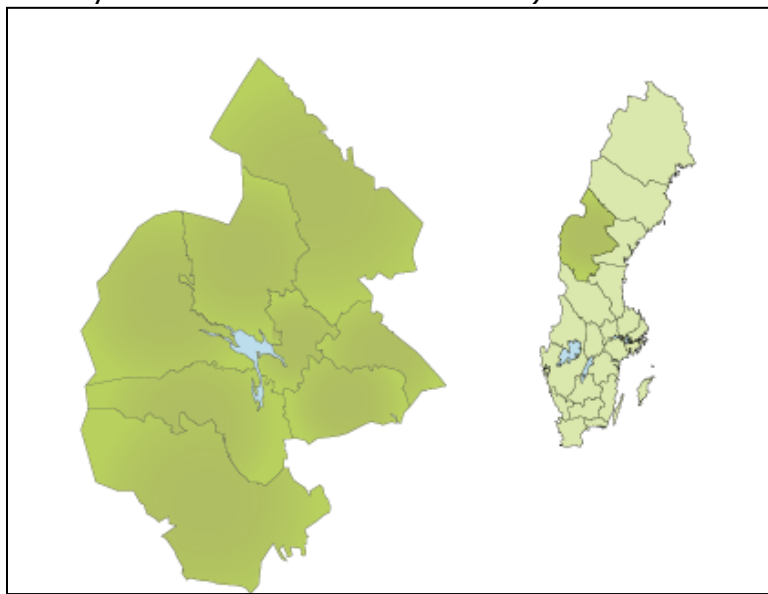
Tables

Table 1 The administrative structure.....	15
Table 2 Regional characteristics.....	17
Table 3 The environmental objectives that are followed up at regional level and evaluation of whether Jämtland can reach the targets with current or planned policy initiatives by 2020.	26

1 Executive summary

Background

Jämtland is a NUTS3 county in the Middle of Sweden covering an area of 53 752,8km². The predominantly rural county of Jämtland is one of the most sparsely populated regions in both Sweden and in the EU with its 2,35 persons per km². Jämtland has approximately 126 201 inhabitants, with one city of 59 373 inhabitants (Östersund) and seven smaller municipalities (Jämtland County Administrative Board 2012a).



Map 1 Jämtland and Sweden. Source: Regionfakta

Inhabitants between 45 and 64 years old are the largest age group in the county (27,1%) even though differences between municipalities are big. The share of inhabitants with post-secondary education in Jämtland (19%) is lower than the Swedish average (23%). The population of Jämtland is decreasing and the county is facing severe demographic challenges as approximately 24% of the labour force is expected to leave the labour market between 2008 and 2018 (Jämtland County Administrative Board 2009a; Jämtland County Administrative Board 2012a; Regionfakta 2013).

Jämtland has vast natural resources in fresh air, clean water, extensive mountain areas, swamps and forests. The natural assets together with the mild advantageous climate conditions provide good preconditions for forestry, agriculture, tourism and outdoor activities as well as renewable energy production. In total approximately 50% of the land area is utilised by agriculture and forestry. The productivity of forests in Jämtland is good because of e.g. the fertile soil and the preconditions are also good for agriculture with short but intensive growing season especially when it comes to forage cultivation that supports the dominating milk and meat production of the county (Jämtland County Administrative Board 2012a; Jämtland County Administrative Board 2013).

The geographically peripheral county stretches over a large area with a spread out settlement structure with small villages and municipalities. Thereby it is

highly dependent on well-functioning infrastructure and transport connections. Two national highways and three train lines cross the county and it has two airports that connect mainly to other regions in Sweden. However because of its sparsity and long distances, the county is strongly dependent on road traffic (Jämtland County Administrative Board 2012a; Regionfakta 2013).

Jämtland is self-supporting in terms of energy and can also export energy as there is no energy-intensive industry in the county. Annually Jämtland produces approximately 12,9 TWh of hydropower and 0,6 TWh of wind power. Also biomass especially from forests is used in particular for district heating. The wind power production and energy production from forest biomass are expected to increase in the future (OECD 2011a; OECD 2011b).

Governance system

Sweden is a parliamentary democracy with three levels of government (national, regional and local). At national level there are 11 ministries that also have sub-ordinate national agencies (e.g. The Swedish Forest Agency). The regional or county level has traditionally had the weakest position between the national level and the strong self-governing municipalities at local level. Municipalities have traditionally had a strong self-governance and they have a monopoly on physical planning in their territories. Regional development strategies and programmes are not binding for the municipalities (Government Offices of Sweden 2012; Smas et al. 2012).

Regional economy and the performance of key sectors

The gross regional product in Jämtland is approximately 343 000 SEK per capita while the Swedish average is approximately 354 000 SEK per capita. Income levels in Jämtland are among the lowest in Sweden and the economic crisis has had a strong negative impact on employment in Jämtland. In 2012, the unemployment rate in the county was 7,2% (compared to the Swedish average of 6,5%) (Regionfakta 2013).

Agriculture in Jämtland employs approximately 3% of the labour force. Agricultural holdings are typically small and 68% of the farmers cultivate an area smaller than 20 hectares. Milk and meat are the dominating forms of agriculture. Active agriculture and animal keeping have been decreasing in Jämtland and a structural change is expected to shift focus from milk to meat production (Federation of Swedish Farmers 2012; Jämtland County Administrative Board 2011a; Jämtland County Administrative Board 2012a; The Swedish Environmental Protection Agency 2012a).

The preconditions for organic agriculture are good in Jämtland because of the mild climate conditions with low need for pesticides and because of the possibilities provided by forage cultivation and animal keeping. Jämtland has the highest relative share of fully converted organic area in Sweden (20%) which is also well above the national average (12,6%). The share of certified cows was 16% in 2010 and the share of organic milk was 14% in 2011 (national average 11,65%) (The Swedish Board of Agriculture 2012; The Swedish Environmental Protection Agency 2013).

Forestry employs 5% of all labour force in Jämtland. A large share of the wood is exported unprocessed but a small share is processed in industries in the region or used for producing bioenergy from forest biomass (Jämtland County Administrative Board 2012a; Jämtland County Administrative Board 2012b). Approximately 2% of the productive forest land in Jämtland is formally protected. In addition, 5% of productive forest land is certified with voluntary forest certificates. The share of formally protected forests in Jämtland has been increasing but the increase is considered too slow. The goals for increasing the amount of protected forests have not been reached and forests with high natural values are continuously felled. Environmental consideration and awareness of environmental issues amongst forest owners and employees need to be improved (Jämtland County Administrative Board 2012a; Jämtland County Administrative Board 2012b; The Swedish Environmental Protection Agency 2013).

The use of forest biomass for energy production doubled in Jämtland between 1990 (less than 800 000 MWh) and 2008 (1,6 TWh). The district heating system has created a stable demand for forest biomass providing the small forest owners possibility to diversify their business. There is still potential for further increasing the use of forest biomass for energy production (OECD 2011a-c).

The **transport** sector employs approximately 5,5% of all labour force. Greening the transport sector is essential for greening the other economic sectors. For example, transport related emissions represent a notable share of resource consumption for producing bioenergy, agricultural production and especially for transport. The sector is responsible for 57% of all GHG emissions in Jämtland and the sector is still dependent on fossil fuels. However efforts both at municipal and regional level have been taken to promote "green traffic" and the use of biogas (Swedish Transport Agency 2011).

More than 7% of all labour force is employed by the **tourism** sector and if all tourism-related trades are included, the total share of employees in tourism in Jämtland is 11%. When the public sector employing approximately 40% of all labour force in the county is excluded, approximately about one fifth of the private sector labour force is employed in tourism-related trades. It has been stated that in no other Swedish county does the tourism sector have as important role for the regional economy as in Jämtland. Winter tourism is particularly important for Jämtland and a variety of outdoor activities are often the main reasons for tourism to travel to the county (Jämtland-Härjedalen Tourism 2010; Jämtland-Härjedalen Tourism 2013; Regionfakta 2013).

It is difficult to find indicators on greening of the tourism sector, but from policy documents and interviews it can be noted that sustainable tourism is a priority in Jämtland. Greening of the transport sector is of key importance for the sustainability of the tourism sector even if the environmental effects of the transport system are usually counted as consequences of the transport sector and not tourism. Tourism also has a great potential in terms of diversifying the rural economy and the amount of enterprises combining agriculture or small-scale food production with tourism activities have been increasing (Jämtland County Administrative Board 2007).

Main drivers in development towards green economy

The regional and local stakeholders see EU, national, regional and local policies as important policy drivers in terms of greening the economy. EU policy goals influence the development but however cannot always reach all the way down to the local level as their implementation is dependent on local level political will in the self-governing municipalities. The efficiency of EU policies as green economy drivers is also influenced by the stability of the policies. More predictable and stable policy with a longer-term approach will better facilitate greening the economy at local level due to increased cost certainty and therefore reduced risk. The same goes for national level where long-term vision in terms of e.g. benefits related to green cars is crucial.

Both EU and national funding have been crucial for the development towards green economy in Jämtland. However it is noted that the bureaucratic burden and the required own financing may hinder the small municipalities with low resources from applying for e.g. ERDF projects. At local level, the role of green public procurement and the role of municipalities leading by example is recognised but according to the stakeholders it has not been yet developed enough in all sectors.

Main barriers

The peripheral location of Jämtland is one of the main challenges for greening the economy. It is essential to develop the transport sector in order to be able to develop the other key sectors of agriculture, forestry and tourism.

Insufficient political will and lack of awareness amongst policy-makers concerning the opportunities related to green economy are other important barriers to the development. The chain from EU level to local level is broken if the local decision-makers do not see the advantages of e.g. green investments. This is also influenced by the EU and national policies not being stable enough and lacking long-term approach which hinders local public authorities and entrepreneurs from making green investments decisions as they are not aware of how the future policy and support frameworks will be formulated.

The demographic challenges can also influence the development as a lack of competent labour force is expected in many parts of the county. In forestry, it is noted there are already vast variation between the competence levels of employees which can further influence the environmental consideration in the sector.

Territorial conflicts

The main territorial conflicts are related to land use and use of natural resources. There are conflicts of interests e.g. between increasing the amount of windmills and the will to present a landscape of undisturbed nature. It is also noted that it is not always unproblematic to define the most environmentally sustainable measures to be taken within a sector either. For example increasing the use of forest biomass may be in contrast with the need to protect the land for the conservation of biodiversity.

Policy needs

The most central policy needs are related to more stable policy and long-term vision as well as raising awareness of local policy- and decision-makers on green economy in order to facilitate the transition towards green economy. Stronger and more stable EU and national policy on the different aspects of green

economy would facilitate e.g. green investment decisions and enable local public authorities to lead by example.

Furthermore, it would be essential to increase the awareness of local policy-makers concerning the opportunities of green economy in order to make sure that the EU and national policy goals are anchored and implemented at local level in the most suitable way. At local level, it would also be beneficial to develop the green public procurement in order to provide a framework for greening the economy at local level.

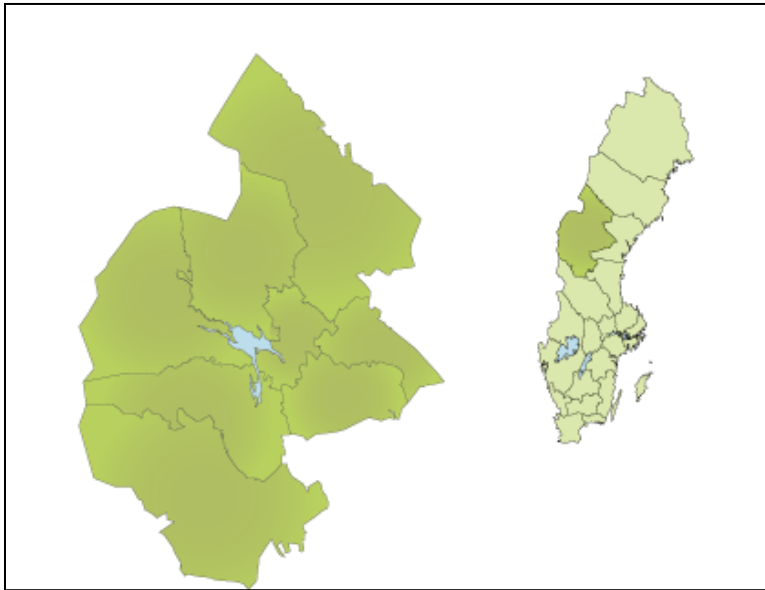
For greening the economy in Jämtland it is of key importance to develop transport infrastructure and the sustainability of transport sector as a whole. All the key sectors are dependent on functioning transport infrastructure. In particular sustainable tourism and increasing the export of forest biomass require developing the transport sector. Ensuring functioning railway connections is of key importance.

In policymaking it is also important to take into consideration the demographic challenges related to the aging population and the resulting imbalance in competence supply. In terms of green economy, it is important to identify how the demographic development influences the opportunities to increase sustainability in all sectors. Lastly, in order to respond to current trends with policy measures, it would also be beneficial to further develop the monitoring and analysis concerning green economy.

2 General Description of the Region

2.1 Geography

Jämtland is one of the NUTS3 counties in Sweden and part of the NUTS2 region of Middle Norrland together with the County of Västernorrland. Jämtland covers a total area of 53 752,80 km² (including water areas) and the total land area of Jämtland is 48 944,80 km² which is approximately 12% of the total territory of Sweden. However only approximately 126 201 (2.35 persons per km²) or 1,3% of the Swedish population live in Jämtland which makes it one of the most sparsely populated county in Sweden and the EU (Jämtland County Administrative Board 2012a).



Map 2 Jämtland and Sweden. Source: Regionfakta

Jämtland shares border with the counties of [Dalarna](#), [Gävleborg](#), [Västernorrland](#), and [Västerbotten](#) and also borders with Norway. The county consists of the provinces of Härjedalen and Jämtland as well as small parts of Ångermanland and Hälsingland. Östersund is the regional centre of the county and its only city with a population of approximately 59 373 inhabitants (year 2011). In addition to the city of Östersund, there are seven small municipalities in the county.

Approximately 50% of the area of Jämtland is covered by forests, while natural grasslands and related areas cover 13% and 12,8% is covered by bare rocks and other land. Further, open mire exclusive turf pits make up 12,3% of the area and 8,8% of the area is covered by water. In total, 50% of the land area is utilised in agriculture and forestry, which is lower than the national average. Jämtland has one national park and approximately 9% of the area is protected within 88 nature reserves. There are also 212 areas that are included in the Natura 2000 network (Regionfakta 2013; The Federation of Swedish Farmers 2012).



Map 3 Municipalities in Jämtland. Source: Regionfakta

Jämtland has three bigger watercourses (Ljusnan, Ljungan and Indalsälven) that start in the mountains and run towards the East. The largest lake in Jämtland, Lake Storsjön, in the centre of Jämtland Härjedalen is Sweden's fifth largest lake with an area of 456 km². In total there are 17 000 lakes in the county. The county is partly mountainous and the highest fell top, Helags (1 797 metres above sea level), also has the southernmost glacier of Sweden (Jämtland-Härjedalen Tourism 2011).

In general Jämtland has vast natural resources in fresh air, clean fresh water, extensive fell areas and swamps and forests. The natural assets with the mild advantageous climate conditions bring about good preconditions for among others forestry, agriculture, tourism and outdoor activities and renewable energy (especially wind and water power).

The forest landscape in Jämtland varies from extensive mountainous areas and low-productive conifer forest close to the fells to fertile forestlands farther away from the fell areas. Because of the variety of the forest landscape in Jämtland, the county has many unique forest environments that require protection but the varied landscape also provides good preconditions for forestry (Jämtland County Administrative Board 2013).

Because of the fertile soil and the lateral soil water movement, the productivity of forests in Jämtland is often relatively high even though they are located high above the sea level. Spruce and pine are the dominating species in the county (Jämtland County Administrative Board 2012).

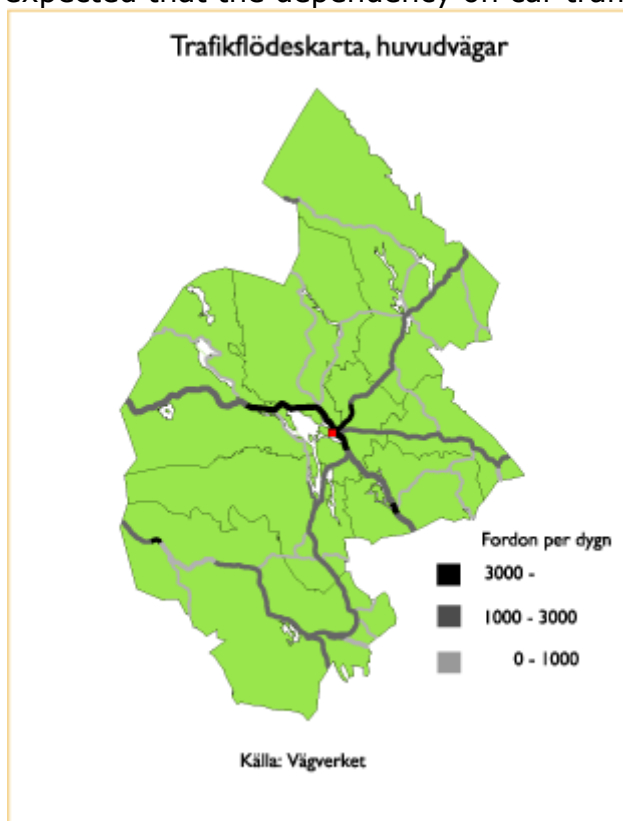
Even though a large share of the land area is covered by forest, the preconditions for agriculture are also good in Jämtland. The mild continental climate influenced by the Gulf Stream and the good access to fresh water have a strong positive influence in the agriculture in the county. The light conditions with long summer nights makes the yearly growth period short but intensive.

In particular the preconditions for forage cultivation are very good in Jämtland which gives good conditions for animal farming. The extensive animal production in the county promotes biodiversity. The regionally dominating milk and meat production benefit from the forage growing conditions and the need for pesticides is low in Jämtland also in comparison to other parts of Sweden (Jämtland County Administrative Board 2011a).

2.2 State of infrastructure

The county of Jämtland stretches over a geographically large area and the distance between the Northernmost and Southernmost part of the county is 400 km while the distance East-West is approximately 250 km (Jämtland County Council 2012). The built structure of the county is spread and characterised with small communities and villages. The spread out population structure combined with long distances makes the county very dependent on functioning transport infrastructure, while access to public transportation remains weak in most parts of the county (Jämtland County Administrative Board 2012a).

Jämtland has good communications for both passenger traffic and goods traffic. National highways E14 and E45 pass the county East-West respectively North-South via the main regional centre of Östersund. However the condition of the roads is in many areas weak, which limits overall accessibility. Passenger car traffic is important in the sparsely populated county and Jämtland has 546 passenger cars by 1000 inhabitants while the national average is 466 cars. It is expected that the dependency on car traffic will remain in the future.



Map 4 Main roads and traffic flows (vehicles per day). Source: Regionfakta/the Swedish Transport Agency

There are also three train lines crossing the county (Norra stambanan, Mittbanan, Inlandsbanan). The railway "Inlandsbanan" is mainly important for goods traffic but also popular in tourist traffic during the summer months. The county has two airports (Åre Östersund and Härjedalen Sveg). The Åre Östersund airport is particularly important for the tourist destinations in the fell

area and has direct flights to Stockholm, Jönköping and Umeå in Sweden as well as to Helsinki in Finland. From the Härjedalen Sveg airport it is only possible to fly directly to Stockholm (Regionfakta 2013; Jämtland County Administrative Board 2012a).

Jämtland is self-supporting in energy and also exports a large share of the produced energy as there is no energy-intensive industry in the county. Yearly Jämtland produces approximately 12,9 TWh of hydropower while the regional electricity use is less than 2 TWh. In addition biomass mainly from forests is used for district heating. The share of wind power is approximately 0,6 TWh and it is expected to increase strongly during the coming years. Hydropower, wind power and biomass from forest residue for bioenergy have big potentials and are used or developed extensively in Jämtland but the regional potential for bioenergy from agricultural land has been considered limited.

There is also good potential for further increase in the export of renewable energy. A slight increase in production can be achieved by streamlining the existing power plants without the expansion of hydropower. Jämtland also has large areas with potential for wind power but the interest of building additional capacity is in conflict with reindeer husbandry and especially tourism. There is further potential in producing bioenergy from forest resources and the presence of district heating has created a large and stable demand for wood residue. Wood residues from Jämtland and the neighbouring county of Västernorrland are also exported to district heating plants in Southern Swedish region with large population concentrations where it is also possible to sell the wood residue for twice the price it can be sold for locally (OECD 2011a; OECD 2011b).

The energy company Jämtkraft located in Östersund is one of the key business activities in the county and produces energy exclusively from renewable sources. It is owned by the municipalities and provides cheap electricity and heat, a resilient and evolving grid and other services such as broadband. It produces approximately 1200 GWh per year, of which 80% is hydropower, 17% is combined heat and power (CHP), 3% from wind and less than 1% from biogas. Since 2007, the company has been investing especially on developing wind energy (OECD 2011b).

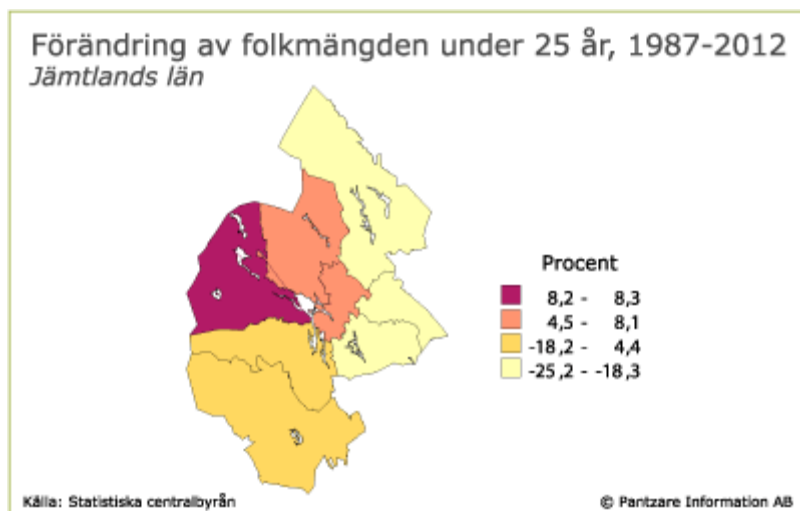
2.3 Demography

Jämtland has 126 201 inhabitants which is approximately 1,4% of the total population in Sweden. As noted Jämtland is one of the most sparsely populated regions in the EU with only 2,6 inhabitants per km² compared to the Swedish average of 22 inhabitants per km² and the EU average of 118 inhabitants per km². The population of Jämtland has been decreasing and the county is facing several demographic challenges in the near future as approximately 24% of the active labour force is expected to leave the labour market during the period between 2008 and 2018.

Between 1998-2007 the population in Jämtland was decreasing by a yearly 4% (with high variation between municipalities). In 2012, the total population of the county decreased by 5,4%. In 2012, the net migration of Jämtland was 626 and the county experienced positive net migration even though the total population of the county decreased. The share of inhabitants born outside Sweden is notably

smaller in Jämtland (7,4% of women and 6,4% of men) in comparison to the Swedish average (15,8% of women and 15,1% of men).

More than half of the population lives in the small communities and villages and 34% live in the only city of the county, Östersund. It is considered as a challenge for the county to provide access to services to the inhabitants as the distances to services are exceptionally long as there are only three densely populated areas or centres.



Map 5 Population change 1987-2012 in Jämtland. Source: Regionfakta/Statistics Sweden

The share of men and women in Jämtland is relatively balanced (50,1% men and 49,9% women) but there has been a deficit of women in fertile age. Likewise, the share of older population has been continuously increasing. Inhabitants between 45 and 64 years old are the largest age group in the county with 27,1% of the population. 22,5% of the population is 25-44 years old. 22,1% of the population is older than 65 years old while the national average is 19,1%. The decrease of active population is expected to continue and prognosis also states that the sparsely populated areas will become even sparser in the future.

There are notably differences in the demographic structure between the municipalities in Jämtland. For example in Härjedalen 27,7% of the population is over 65 years old while in Östersund the share of population over 65 years old is 19,8%. Also the share of children is very low in some of the municipalities (Härjedalen: 14,1%) but close to or above the national average of 17,9% in some municipalities (Åre 17,8% and Krokom 21,0%).

The share of inhabitants with post-secondary education of three years or more in Jämtland is below the Swedish average. Approximately 19% of the inhabitants between 25 and 64 years have post-secondary education longer than three years while the Swedish average is 23% (Jämtland County Administrative Board 2009a; Regionfakta 2013; Jämtland County Council 2012).

2.4 Administrative structure

In total Sweden consists of eight national areas, 21 counties and 290 municipalities. Jämtland is one of the NUTS 3 level counties and together with the Västernorrland County builds up a NUTS 2 national area of Middle Norrland. The NUTS 1 region of North Sweden consists in turn of the Middle Norrland area

and North Middle Sweden and Upper Norrland. The County in Jämtland in turn consists of eight LAU 2 level municipalities at the lowest Swedish administrative level.

Table 1 The administrative structure

Country	National Area (NUTS 2)	County (NUTS 3)	Municipality (LAU 2)
Sweden	Middle Norrland	Jämtland	Berg
			Bäcke
			Härjedalen
			Krokom
			Ragunda
			Strömsund
			Åre
			Östersund

2.5 Governance

Sweden is a parliamentary democracy with three levels of government (national, regional and local). The Swedish parliament (riksdag) is appointed through election and is the highest decision-making organ in Sweden. The parliament elects a prime minister who forms a Government. In addition to the 11 ministries, the Government has subordinate agencies that are responsible for implementing public policies, overseeing the provision of many public services and discharging a range of regulatory functions (Government Offices of Sweden, 2012).

The regional or county level has traditionally been the weakest link in Sweden's governance system, caught between the self-governing municipalities with high independency and the national level. Since the 1990s', the state has been delegating responsibility for regional growth to the regional level, but the system of regional governance has remained fragmented with various kinds of political and administrative efforts to reorganise the structure. Still the framework for regional development is relatively centralised (Smas et al. 2012; OECD 2011b).

Each county has a county administrative board acting as state representative at regional level. The county administrative boards function as links between the municipalities in the region and the Swedish Government, the Swedish Parliament and the national agencies, such as the Swedish Forestry Agency. In addition, each county has a county council that is mainly responsible for health care, infrastructure and public transportation. In some counties, the regional self-government (County or Regional Council) is the main responsible for the regional development work, whereas in other counties the main responsibility is on regional cooperation bodies formed by the municipalities. In some counties, also the state representative county administrative board can be the responsible body. Thus, the governance system is diversified and the preconditions, responsibilities and rights of the regional level actors vary between regions. In Sweden also the regional level is governed by directly elected representatives (Smas et al. 2012; Swedish Association for Local Governments and Regions 2009).

In Jämtland, the **County Administrative Board** has three main tasks: to promote development in the county, to promote the implementation of the

national policy goals in the county and to act as an administrative authority (Jämtland County Administrative Board 2013b).

The **Regional Council** of Jämtland works for coordinating and making the regional development work in the county more efficient. It is a cooperation institution, made up of representative from the municipalities and the County Council Administrative Board. It has the responsibility to draw up, implement and follow-up on strategies for the development of the county (the most central being the Regional Development Strategy and the Regional Development Programme). The Regional Council decides how national funding for regional development is used and works with applications for the EU Structural Funds. The Regional Council works in the areas of trade and industry, infrastructure, competence and education, regional attractiveness and living environment (The Regional Council of Jämtland 2013).

The municipalities are responsible for a wide range of services for their inhabitants. Municipalities have traditionally had a high level of self-governance in Sweden and elected councillors at local level decide how for example tax revenue is distributed (Swedish Association for Local Government and Regions 2010). The municipalities also have a monopoly on physical planning, which means that regional development strategies and programmes established at regional level are not binding for the municipalities (Smas et Al. 2012).

Since the industrial revolution the energy sector has been responsible for the extraction, transformation and supply of energy. While the energy sector has become a fundamental pillar in modern society it is also the main responsible for Greenhouse Gas (GHG) emission as being predominantly based on fossil fuels. Furthermore

3 Regional Economy

3.1 Overall economy of the region

Compared to the national average of 354 000 SEK per capita, the gross regional product in Jämtland is approximately 343 000 SEK per capita. This however varies between the municipalities, where Östersund and Härjedalen are well above the national average while municipalities such as of Bräcke are only half of the national average.

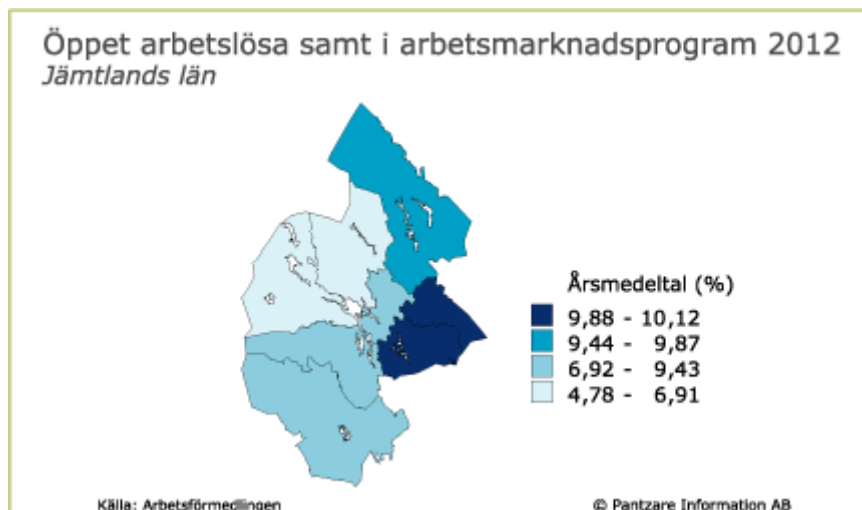
Income levels in Jämtland are among the lowest in Sweden. In 2010, the average annual salary per employee in Jämtland was 269 000 SEK while the national average was 299 000 SEK.

Table 2 Regional characteristics

Jämtland	
Population	126 201
Net migration	626
Land area	53 752,8 km ²
GRP per inhabitant	343 000 SEK
Unemployment rate	7,2%
Average Yearly Salary	269 000 SEK

The economic crises had a strong impact on employment in Jämtland and decreased the number of gainfully employed in Jämtland. Between 2007 and 2010, the share of unemployed of all working age citizens increased from 6% to 9%. However in 2011, the share of unemployed working age inhabitants had again decreased to approximately 7%. In 2012, the share of unemployed was 7,2% whereas the national average was 6,5%.

Unemployment rates vary extensively between municipalities. 10% of the working age inhabitants of the small rural municipality of Bräcke were unemployed in 2012 while the unemployment rate of the municipality of Åre with the main tourist attractions was only 4,8%. In general, the municipalities in the North Western part of the county have a great share of tourism activities, and therefore lower unemployment, while the Eastern municipalities have unemployment rates approximately between 7-10% (see map X) (Regionfakta 2013).



Map 6 Share of unemployed persons and persons taking part of labour market measures (Source: Regionfakta/Swedish Employment Agency)

The share of employees in the primary sector in Jämtland is approximately 6% while the national average is approximately 2%. 17% of the active labour force in Jämtland is working with manufacturing whereas the national average is 21%. The share of service sector is approximately 75% in line with the Swedish average. In addition, the share of work force employed in the public sector in Jämtland is significant (approximately 40%) (Regionfakta 2013; Statistics Sweden).

99,5% of all firms in Jämtland are considered small enterprises, and these employ 76% of all private sector employees in the county. In 2011, the amount of new enterprises per 1000 inhabitants (16-64 years old) in Jämtland was 12,2, which almost matches the Swedish average of 12,3 (Regionfakta 2013; Swedish Federation of Business Owners 2012). This is particularly interesting given that aforementioned measures of economy and economic growth show a poorer performance relative to national averages. As such, it seems to indicate that small and medium sized start-ups are well-supported in the region, and that they form an important part of the overall economy for the region.

In order to determine which sectors are most important for the development of green economy in Jämtland, the total amount of employees in each sector as well as the share of working force in each sector were studied. The Swedish register-based labour market statistics was used to determine the relevance of each GREECO sector because data on regional performance in terms of gross value added in different sectors is not available at NACE Rev. 2 two-digit level. GREECO classification of NACE Rev.2 was used to classify the Swedish register-based labour market statistics data (based on NACE Rev.2 two-digit sector delineation). As the information of regional gross value added is not available, the information on the share of employees in each sector can give a picture of the relevance of each sector for the regional economy.

In addition, the regional development strategies and programmes as well as sector-specific strategies and plans at regional level were studied in order to determine which sectors have the most relevance for the development of green economy in the county. Based on the analysis, the sectors of agriculture and forestry (bioeconomy), transport and tourism were chosen as the focus sectors of the case study. Further justification for choosing those sectors are included in

the following short descriptions of the relevance of each GREECO sector for the regional economy.

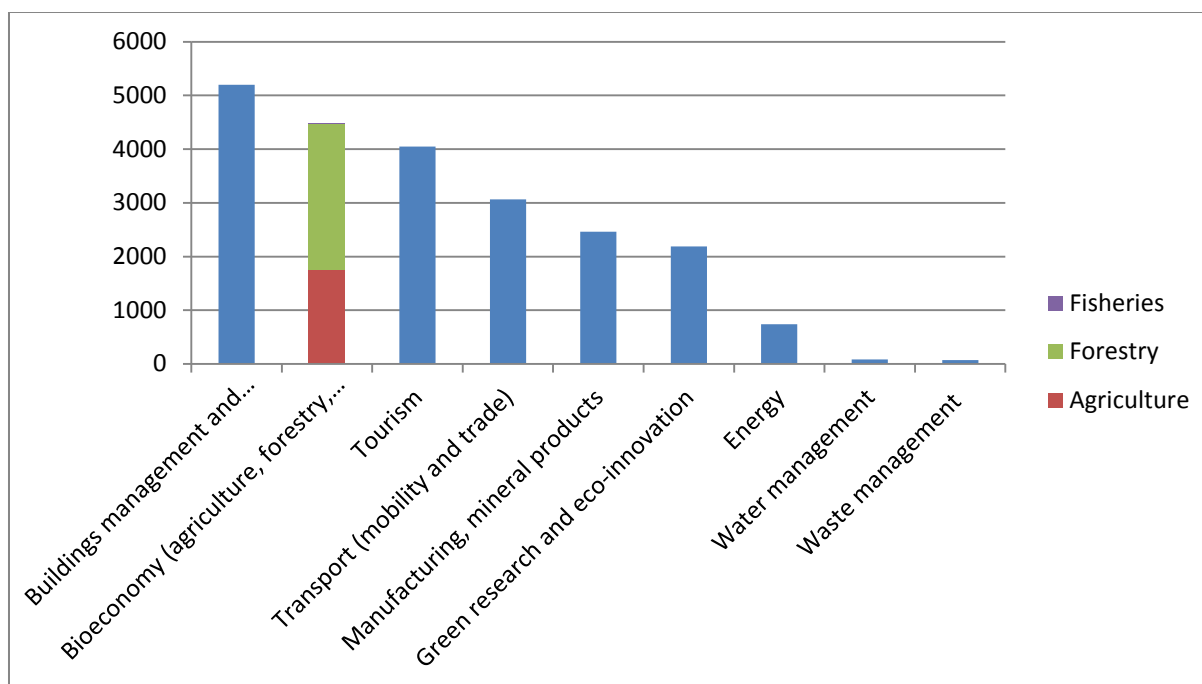


Figure 1 Amount of employees per GREECO sector in Jämtland (Statistics Sweden 2012)

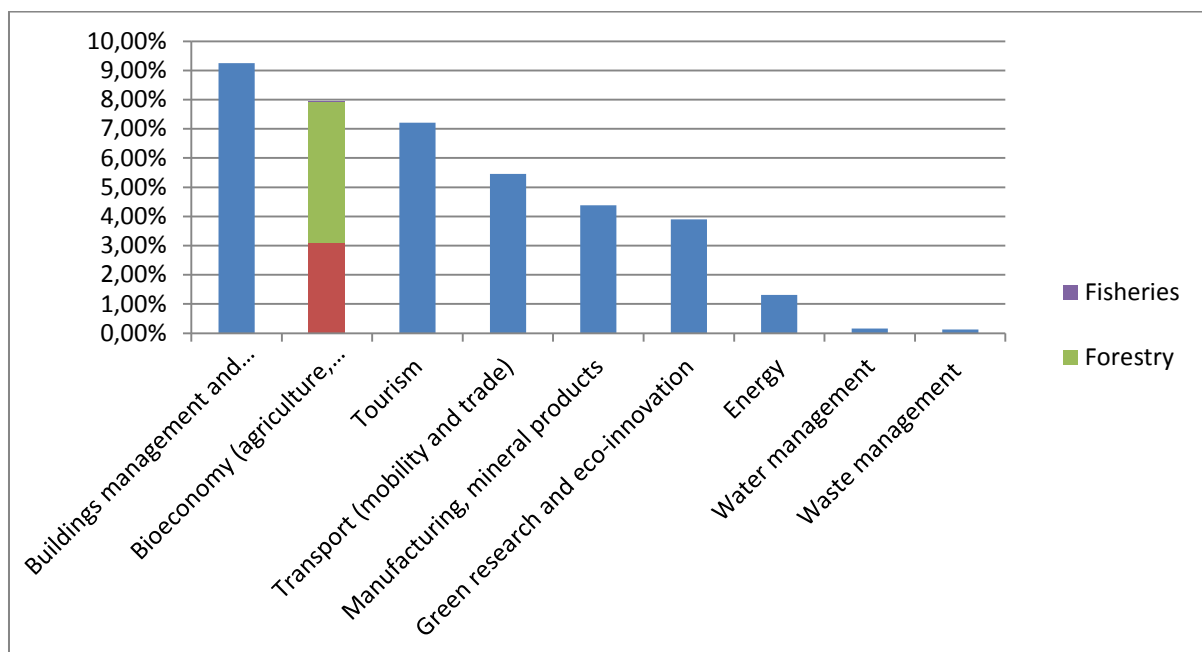


Figure 2 Share of each GREECO sector of the total labour force in Jämtland (Statistics Sweden 2012)

When the amount and share of employees of GREECO sectors are studied, the public sector is the most important employer in Jämtland. 40% of all labour force is employed in social work, education, human health services, public administration and social security services or employment services. However the public sector is not relevant to include in terms of greening the economy and not one of the GREECO sectors.

When GREECO sectors are studied, the sector of building management and construction seems most important in terms of employment. There is in total more than 5000 employees in the sector which accounts for more than 9% of Jämtland's workforce. After the public sector and retail and trade, building and construction is the third biggest sector in Jämtland in terms of share of work force. However greening the construction sector is not included amongst the most important development areas of Jämtland in regional development strategies and plans does not seem to be one of the main focus areas of the county even though it is mentioned for example in connection to greening the tourism sector.

Bioeconomy (agriculture and forestry) employs approximately 4500 people in Jämtland (almost 8% of work force). Jämtland is predominantly a rural county with high natural resources and primary sector is still important. Forestry employs approximately 5% of work force in Jämtland and agriculture employs approximately 3% of all labour force. A study conducted in 2003 shows that agriculture and forestry together give a direct, indirect and induced employment effect of approximately 25% in several of the municipalities in Jämtland. The bioeconomy is thereby central for employment in the county (Jämtland County Administrative Board 2012a).

Greening of agriculture and forestry are important priorities in Jämtland and the issues have for example been discussed in the regional energy and climate strategy as well as in specific reports of the County Administrative Board concerning climate change adaptation in agriculture and forestry.

The tourism sector employs approximately 4000 people, more than 7% of all labour force. Especially accommodation and food services (RI) are important for the regional economy and employ almost 5% of all labour force. Outdoor activities and especially winter sports are popular tourist attractions in Jämtland. Sporting services and amusement and recreation services (R93) employ 1,4% of work force.

The statistics are unlikely to capture all tourism related activities and the importance of the sector for the regional economy can be expected to be even higher than what can be perceived in the observed data. According to other data including four different tourism-related trades, the total share of employees in the tourism sector in Jämtland is 11% while the Swedish average is 9,4%. As noted, the public sector is the main employer in Jämtland employing 40% of labour force. If the employees in the public sector are excluded, approximately almost one fifth of private sector employees are active in tourism-related trades (Regionfakta 2013; Statistics Sweden 2012).

The importance of the sector in terms of greening the economy can be determined from the position of the tourism sector in related regional strategies and programmes as well as from the specific regional strategy for sustainable tourism.

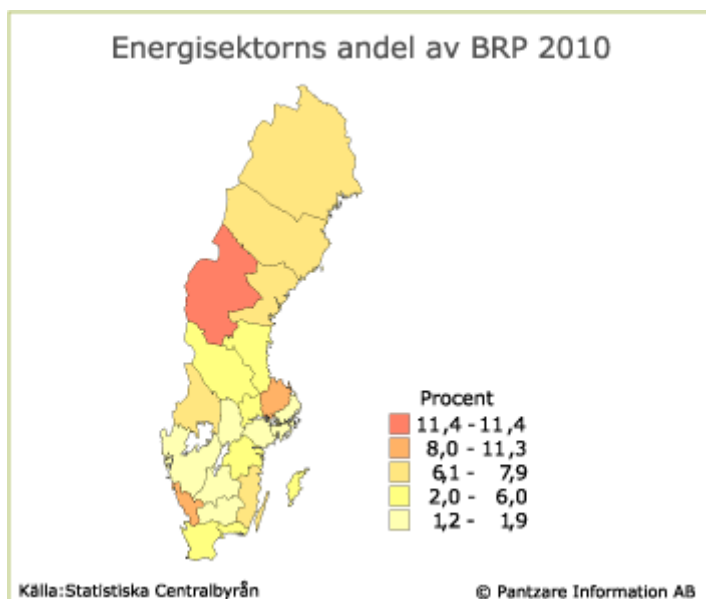
The transport sector (mobility and trade) employs over 3000 people (approximately 5,5%). Land transport services and transport services via pipelines (R49) is the most significant part of the sector in Jämtland employing 3,5% of the regional work force.

The county and especially the municipality of Östersund have been active in developing green traffic for example in EU funded projects. The county can be considered to be pioneering in the area of developing green transport.

Manufacturing employs approximately 2400 people in Jämtland (4,38%). "Fabricated metal products, except machinery and equipment (R25)" employ 1,5% and "machinery and equipment (R28)" employ 1,3% of the work force. The importance of primary sector and transport and tourism are more important for the regional economy than the manufacturing industry and there is no major industrial production in the county. As such, it is not included in regional strategies as an important sector contributing to greening the economy.

The GREECO sector of green research and eco-innovation employs approximately 2200 people (3,89%). Judging from regional strategies and other data, the sector is not specifically central for the development of green economy. The county is not especially known for innovation and regional innovation has not been emphasised as one of the most important contributors to greening the economy.

The energy sector in Jämtland employs 738 people (1,31%) being a minor employer in the county. However the share of energy of the gross regional product is high in Jämtland. In 2010, the energy sector stood for 11,4% of the gross regional product which is higher than in any other Swedish county (see Map 7).



Map 7 The share of energy sector of the regional product. (Source: Regionfakta/Statistics Sweden)

Jämtland is already strong on renewable energy (especially hydropower) and developing renewable energy supply is a regional priority. In the case study, energy related issues are included horizontally in relation to the selected GREECO sectors where the development related to renewable energy is particularly relevant (e.g. forest biomass and biofuels in transport sector).

The GREECO sectors of waste and water management are of minor importance for the regional economy of Jämtland employing less than one hundred people

each. They are not included as the main potential factors for developing the green economy in regional strategies and programmes.

3.2 Description of the selected key sectors

In this chapter the selected sectors of agriculture, forestry, transport and tourism as well as their positions in the regional economy of Jämtland are further discussed.

The main regional and national policies influencing the development of each of the selected sectors in relation to greening the economy are presented in annex 1. The included policies are chosen based on interviews and desk research. Information on EU policies can be found in relevant sector reports and are not repeated in the policy tables of this case study.

3.2.1 Agriculture

In 2010, there was approximately 58 000 hectares agricultural land in Jämtland utilised by 2100 enterprises. The overall turnover of the sector in the county was approximately one billion SEK in 2009. Most of the farms in the county are small or medium-sized. 68% of the farm entrepreneurs cultivate an area smaller than 20 hectares and only 6% of the enterprises cultivate more than 100 hectare per enterprise. (The Federation of Swedish Farmers 2012; Jämtland County Administrative Board 2013c).

Milk and meat production are clearly the dominating forms of agriculture in Jämtland and there are few farms without cattle. 90% of the agricultural land in Jämtland is used for forage cultivation and also the rest is used mainly for growing corn and grain as feedstuff.

Milk production stands for approximately 25% of the total turnover of the agricultural sector in Jämtland. If also refinement is included, the share of milk is more than half of the total turnover. Furthermore, milk production in total including EU support for milk producers make up 75% of the total turnover in agriculture. Milk production and refinement has the biggest economic potential in agriculture in Jämtland.

An extensive share of the produced milk is exported and consumed outside the county. Jämtland produces more milk and meat than is consumed in the county and both milk and meat are also sold nationally. In meat production cattle is dominant but also lamb and pig are bred.

Active agriculture and animal keeping is decreasing in Jämtland and during the last three years, one fifth of the milk producers have quit. A structural change towards increased meat production instead of milk is expected. The change is influenced by several factors such as increasing age of farmers and decreasing profitability. This change is expected to have consequences on e.g. the agricultural landscape which is discussed further in chapter 4.1 (Jämtland County Administrative Board 2011a; Jämtland County Administrative Board 2012a; The Swedish Environmental Protection Agency 2013a).

3.2.2 Forestry

Forestry is one of the most important basic industries of Jämtland and there is approximately 2,6 million hectares of productive forest land. Approximately half of the total land area of the county is thereby productive forest.

There are approximately 5700 forest enterprises in Jämtland (2010) and the total turnover of the sector in 2009 was approximately 4,8 billion Swedish crowns. 43% of the forest land in Jämtland is cultivated by private family-owners. Forest enterprises employ over 900 people while wood processing enterprises employ further 1000 people. The actual amount of employees is however in practice higher because many of the people active in the sectors work as entrepreneurs and are therefore not counted as employees.

The total volume of felled timber in the county in 2006-2008 was yearly approximately 6 474 000 m³ which is the fourth highest in Sweden. An extensive share of the wood is exported from the county unprocessed but a small share is also processed in a few bigger and several smaller industrial enterprises in the county. The raw material is used mainly in saw mills but also in for example producing bioenergy (Jämtland County Administrative Board 2012a; Jämtland County Administrative Board 2012b).

3.2.3 Transport

The transport sector and good transport infrastructure are especially important to Jämtland as it is a county with large geographic area, long distances and extremely sparse population (2,4 inhabitants/km²). Green transport has been a priority in the county at least since the early 2000's and a further description of the related development work can be found in chapter 4 ("How green is the economy?").

Traditionally, especially the train transport possibilities for inhabitants and businesses have not been sufficient in the county. Furthermore, the amount of passenger cars in the county is high and the goods transport with lorry trucks stand for a big share of emissions in the county. Possibilities for public transportation are weak in many parts of the county and most bus lines in the rural areas are set up mainly as school transportation. (Jämtland County Administrative Board 2010; Regional Council of Jämtland 2012; Regionfakta 2013).

3.2.4 Tourism

Tourism is an important sector in Jämtland and the county is one of the most pronounced tourist regions in Sweden. 11% of all employees in Jämtland are active in trades related to tourism while the Swedish average is 9,4%. Variations between municipalities are however large. Åre is one of the most popular and biggest tourist areas in Sweden and 27,2% of the labour force in the municipality of Åre work in tourism-related trades.

The total turnover of tourism sector in Jämtland was 4,1 billion SEK in 2012 with an increase of 130 million SEK from 2011. Jämtland is the county in Sweden where the role of tourism in economy is most central for the regional economy (Regionfakta 2013; Jämtland-Härjedalen Tourism 2013).

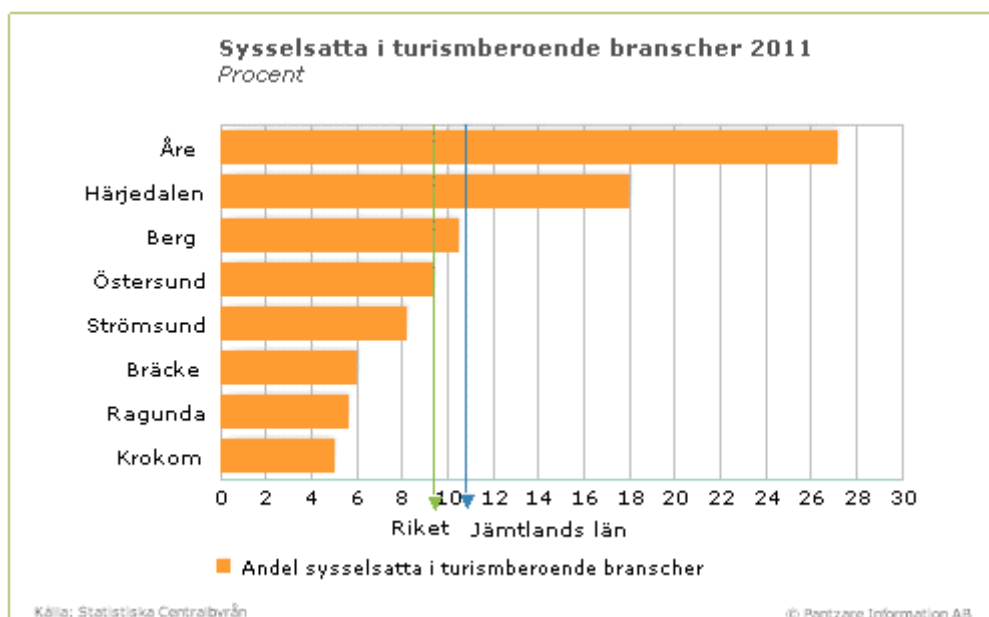


Figure 3 Share of employed in tourism related trades. Source: Regionfakta/Statistics Sweden

Winter tourism is particularly important for Jämtland (especially winter sports and skiing), and a variety of sport and outdoor activities form the main reason for tourists to travel to Jämtland. 17% of the total turnover of the tourism sector comes from activity tourism while the Swedish average is 7%. For example skiing, fishing and hiking are important reasons to travel to Jämtland as well as attending different events (Jämtland-Härjedalen Tourism 2010; Jämtland-Härjedalen Tourism 2013).

Of the total overnight stays, more than 77% were by Swedes, almost 16% by other Nordic citizens and almost 7% European citizens and citizens from other countries. Approximately 50% of the overnight stays by foreign citizens and 70% of the Swedish stays are spent during winter which further underlines the importance of winter tourism in Jämtland (Regionfakta 2013; Jämtland-Härjedalen Tourism 2010).

3.3 Interrelations between the sectors

The need for well-functioning and accessible transport connections links the sectors of agriculture, forestry and tourism to the transport sector. This is especially important in a county like Jämtland, a region that has long distances both within the county and to the bigger population centres in Sweden and abroad. As such, the transport sector and its development are closely connected, and explicitly mentioned in regional strategy documents as essential for the development of both bioeconomy and tourism.

It is essential to be possible to travel to the county in a sustainable manner. Therefore further development of the railway network is important as there are several tracks that need to be improved in terms of capacity. Developing the railway capacity is also essential from the perspective of overall energy efficiency (OECD 2011a).

Good quality roads are of particular importance also for the forest sector in Jämtland. In many places the roads are not in sufficiently good conditions for

heavy transportation and in 2010, one third of the roads in Jämtland were possible to access by lorry only when the roads were frozen (Jämtland County Administrative Board 2012b).

There are also interrelations between agriculture and tourism as Jämtland is predominantly rural. Small-scale tourism activities in farms have become more common in the county especially when it comes to hunting and fishing activities (Jämtland County Administrative Board 2012a).

There are also clear interrelations between tourism and wind energy in terms of land use. Territorial conflicts are discussed further in Section 7.

4 Performance of the key sectors of green economy – How green is the economy?

In this chapter the greening of the selected key sectors is discussed in more detail in light of statistical data, regional strategies and information as well as information received from interviews with regional and local stakeholders.

For the most part detailed and quantitative policy targets have not been formulated by regional or national actors. Therefore, it is not always possible to give a simple quantitative answer to how close the sectors are to the policy targets. For some specific detailed issues indicators may be available, but referring to the goals related to very specific issues would not give a proper picture of the general performance of the sector in terms of greening the economy.

The main objectives of Swedish environmental policy are included in Sweden's Environmental objectives where 17 goals are presented. The goals are adapted and revised at the regional level to fit to the regional conditions. However the specific regional level targets have been formulated in Jämtland last time in 2006 and the goals concern year 2010.

In 2012-2013, Jämtland will revise the goals and draft a new document on the environmental objectives in the region. Information on whether the goals that were set in 2006 for 2010 were reached cannot be found in connection to other information concerning the goals at the website of the County Administrative Board.

The Swedish Environmental Protection Agency keeps up an extensive website on the objectives and the progress towards them where information on progress concerning each target in Sweden and in Swedish regions is presented.

Many of the targets both the national and regional level concern the selected sectors of agriculture, forestry, transport and tourism. For each sector the analysis from the environmental objectives portal (www.miljomal.se) concerning the current regional performance and the possibility to reach the policy targets is presented.

Table 3 The environmental objectives that are followed up at regional level and evaluation of whether Jämtland can reach the targets with current or planned policy initiatives by 2020.

Clean air	Close
Natural acidification only	No
Non-toxic environment	No
A safe radiation environment	No
Zero-eutrophication	Close
Flourishing lakes & streams	No
Good-quality groundwater	Close
Thriving wetlands	No
Sustainable forests	No
A varied agricultural landscape	No
A magnificent mountain landscape	Close
A good built environment	No
A rich diversity of plant & animal life	No

At the moment (April 2013), the national public authorities responsible for the formulation and follow up of Sweden's Environmental Objectives are in the process of redefining the goals more in detail in terms of quantitative targets.

The new types of targets are to be formulated in a way that should make it easier to see when a target has been reached. According to the Swedish Environmental Protection Agency, the redefining of the targets should also be done at regional level (Annemay Ek, Personal communication 2013).

4.1 Agriculture

As noted in chapter 3, agriculture employs approximately 3% of all labour force in Jämtland and it is an important employer especially in the most rural areas outside the regional centre of Östersund and its surroundings.

The preconditions for organic agriculture are good in Jämtland because of the climate conditions with low need for pesticides and because of the dominating status of forage cultivation and livestock keeping. Therefore also the amount of farms receiving environmental compensation for organic production or agri-environmental payments has been large.

Jämtland's progress towards the national environmental objectives is followed-up with specific indicators that are used to evaluate whether each of the goals can be reached with current and planned policy measures.

Of the nationally defined and regionally adapted and revised goals that are particularly relevant to agriculture ("varied agricultural landscape", "non-toxic environment" and "zero eutrophication" as well as "rich diversity of plant and animal life"), Jämtland is close to reaching only the goal of zero eutrophication by 2020. However more information on the effects of eutrophication in mountainous as well as more resources targeted to those areas is needed.

The environmental objective most specifically targeted towards agriculture is the goal of varied agricultural landscape. In Jämtland the objective cannot be reached by 2020 with current and planned measures.

The development of the agricultural landscape is strongly influenced by the structural change in agriculture and decreased profitability. Positive development has however been taking place concerning awareness of the importance of agriculture and food production among the general public.

The more specific regional goals also include objectives such as that 75% of the elected local politicians responsible for agriculture or environmental issues shall have participated in education concerning sustainability and resource management in agriculture. Information on whether the goals related to raising awareness have been reached has not been found.

Environmental objective:
Varied agricultural landscape
"The value of the farmed landscape and agricultural land for biological production and food production must be protected, at the same time as biological diversity and cultural heritage assets are preserved and strengthened."

Organic agriculture

The county of Jämtland has the highest relative share of fully converted organic areas in Sweden together with the county of Värmland. In 2011, 16 193 hectares of the agricultural land in Jämtland was fully converted organic which is more than 20% of the total agricultural land area. In addition, 4 440 hectares were under conversion in 2011 in Jämtland.

In Sweden, approximately 12,6% of the agricultural land was fully converted organic in 2011. Thereby Jämtland has reached the national policy target of 20% of organically cultivated areas whereas nationally Sweden has not reached the goal (The Swedish Board of Agriculture 2012; Statistics Sweden 2012).

Andel åkermark med ekologisk odling

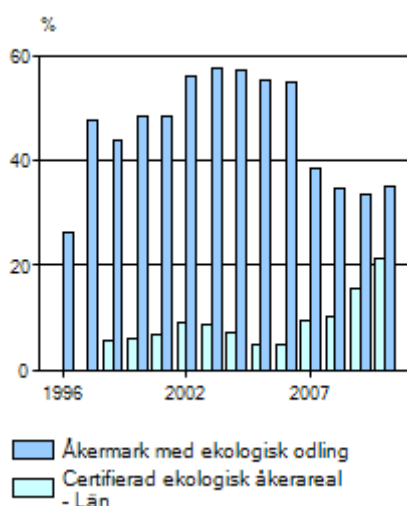


Figure 4 Share of organically cultivated arable land and share of certified organically cultivated land (Source: The Swedish Environmental Protection Agency, 2013)

In 2011, more than 30% of the field area in Jämtland was supported with environmental compensation for organic production. However in order to be able to market the agricultural products as organic also certification is needed. In 2010, 21,3% of the cultivated field area had an environmental certification. In figure X is can be seen that the share of organically cultivated arable land decreased in 2007 but it is noted that the support system was changed in 2007 and is now more directed towards ecologic farming that gives certified ecologic products and therefore the share of certified areas has increased strongly.

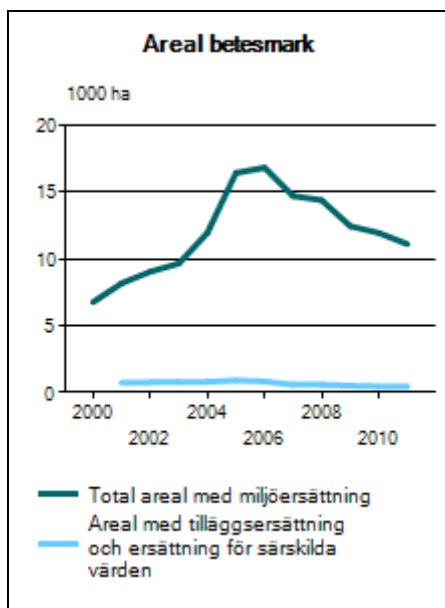


Figure 5 The total area of pasture land with agri-environmental payments (Source: The Swedish Environmental Protection Agency, 2013)

The share of pasture land receiving agri-environmental payments decreased from 11 085 hectares in 2006 to 11 085 hectares in 2011. The development is dependent on among other things the decreasing amount of milk producers and resulting decreasing amount of grazing livestock. There are many pasture land areas in the county that will become overgrown unless they are restored. The regional goal set in 2006 was to keep the amount of pasture land at the level of 2005 but the amount on pasture lands has been decreasing, it does not seem likely that the goal can be reached.

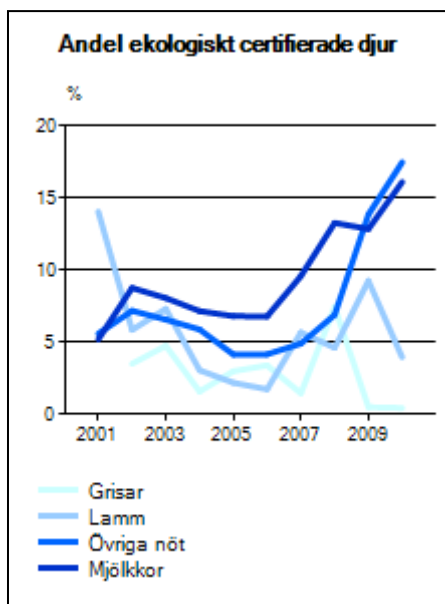


Figure 6 Share of eco-certified animals (pigs, lambs, other cattle and milk cows) (Source: The Swedish Environmental Protection Agency, 2013)

The regional and national more specific goals set in 2006 include that 20% of the milk and meat production would be organic by 2010. The follow-up analysis only provides information concerning pigs, lambs, other cattle and milk cows separately and not concerning all livestock together. In 2010, 16% of the cows in

Jämtland were certified (KRAV certification). The share of certified cows was doubled between 2005 and 2010. Certification of other cattle increased from 4% in 2005 to 17% in 2010. However the share of certified pigs has been only 0,4% and the share of certified sheep 4%.

The share of organically produced milk has increased from 7% to 14% between 2007 and 2011. Jämtland is now above the national average of 11,65% of organically produced milk.

Bioenergy

In relation to bioenergy production from agricultural land, the focus has been more on renewable energy from water, wind and forests than from agriculture. The new action plan for fossil fuel free Jämtland states that the possibilities for biogas from agriculture should be further studied and the climate and energy strategy from 2009 states has biofuel from forestry and agriculture as well as biogas from agriculture, waste and sewage as some of its focus areas (Jämtland County Administrative Board 2009b; Jämtland County Administrative Board 2011b; Jämtland County Administrative Board 2012c; The Swedish Environmental Protection Agency 2013a).

Challenges

In terms of demographics, one constraint of greening the agricultural sectors is the high average age of farmers in Jämtland and, as a result, the low share of young farmers. With that being said, there is a small trend where the younger generation shows interest in agriculture and self-supporting lifestyle. In the future, this could have a role in stopping overgrowing and reversing the decrease of pasturing animals as more farmers would be needed in order to keep the agricultural landscape open.

According to the assessment for year 2012, the weak profitability of agriculture in Jämtland further worsened during 2012 because of low prices for agricultural products as well as difficult weather conditions. In 2012, the situation worsened in all agriculture. Furthermore, investments in agriculture had come to stop in 2012 which also has a negative effect on the development of sustainable agriculture in the county.

As a result decreasing share of active agriculture and animal keeping, the amount of overgrown pasture land and fields has increased which can challenge biodiversity and hinder the survival of certain animal and plant species (The Swedish Environmental Protection Agency 2013a).

4.2 Forestry

The forest sector in Jämtland employs almost 5% of the regional labour force and most of the employees in the sector work with "products of forestry, logging and related services" (R02). According to the follow-up evaluation of the national and regional environmental objectives,

Environmental objective: Sustainable Forests "The value of forests and forest land for biological production must be protected, at the same time as biological diversity and cultural heritage and recreational assets are safeguarded. "

Jämtland will not be able to reach the environmental objective of sustainable forests with current or planned measures by 2020 (see introduction to chapter 4 for more information about the Sweden's environmental objective system). The most important reason for not reaching the objective is that it will be difficult to keep up the biodiversity of forests.

Also, the nationally and regionally adapted environmental objective of rich diversity of plant and animal life concerns forestry. Forestry uses the largest share of land in Jämtland and is the most important single contributor to decreased biodiversity. It is stated in the analysis of the objective that the most important measure aiming at protecting the diversity of plant and animal life would be to protect or re-build a sufficient amount of old biologically valuable forest.

Formal protection of forest land

Approximately 2% of the productive forest land in Jämtland is formally protected as nature reserves or protected with habitat protection (biotopskydd) or nature conservation agreements (naturvårdsavtal). In addition, approximately 5% of the productive forests are certified with voluntary forest certificates (Jämtland County Administrative Board 2012b).

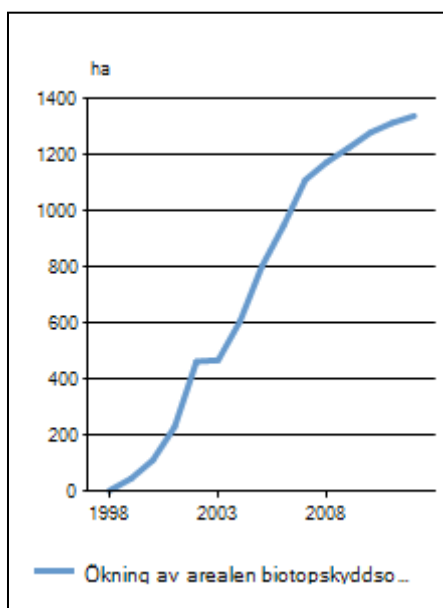


Figure 7 The increase of habitat protection areas (hectares of productive forest land) (Source: The Swedish Environmental Protection Agency 2013a)

Environmental objective: A Rich Diversity of Plant and Animal Life

"Biological diversity must be preserved and used sustainably for the benefit of present and future generations. Species habitats and ecosystems and their functions and processes must be safeguarded.

Species must be able to survive in long-term viable populations with sufficient genetic variation. Finally, people must have access to a good natural and cultural environment rich in biological diversity, as a basis for health, quality of life and well-being."

The land area of habitat protected forests (biotopskyddsområde) increased in 2012 by 26 hectares of productive forest land. Habitat protected areas are smaller land or water areas that are living environments for endangered species or areas that for other reasons need special protection. In biotope protected forests, no activities can be taken that can damage the natural environment.

This means that it is not allowed to deforest the area or use it for forestry in any way. The forest owner receives compensation from the state for the loss of property value. There is no time limit for the protection and a biotope protected area is protected all future.

Forms of forest protection in Sweden
<i>"National parks or nature reserves A strong and long-term protection can be achieved by setting aside forest land as National Parks or nature reserves. Sweden has some 3,200 nature reserves and their size may vary from a few hectares to thousands of hectares.</i>
<i>Habitat protection Smaller habitats with plants and animals worthy of protection can be preserved through habitat protection.</i>
<i>Nature conservation agreements High environmental values can also be protected through nature conservation agreements between forest-owners and the State.</i>
<i>Voluntarily protected The forest land that is voluntarily protected can be documented in different ways, e.g., in a Green Forest management plan."</i> (Swedish Forest Agency 2013)

Between 1999 and 2010, the habitat protected productive forest area in Jämtland increased with 1338 hectares while the regional goal was to protect 2300 hectares of new territory. The regional policy target concerning habitat protected forests has thereby not been reached by 2012 (The Swedish Environmental Protection Agency 2013a).

The share of forest protected with voluntary nature conservation agreements (naturvårdsavtal) between the forest owners and the state is also increasing slowly. The aim of the nature conservation agreements is to develop and protect the natural values of an area. In the agreements, it is stated how the area is to be protected and developed and the compensation for the landowner is defined. Unlike the habitat protected areas, areas protected with nature conservation agreements are protected within the agreements for a limited time from one year to fifty years. The forest owners receive financial compensation. The interest among the forest owners towards the agreement is relatively high but the amount of new agreements that can be done each year is also dependent on the amount of funding the Swedish Forest Agency can allocate to them.

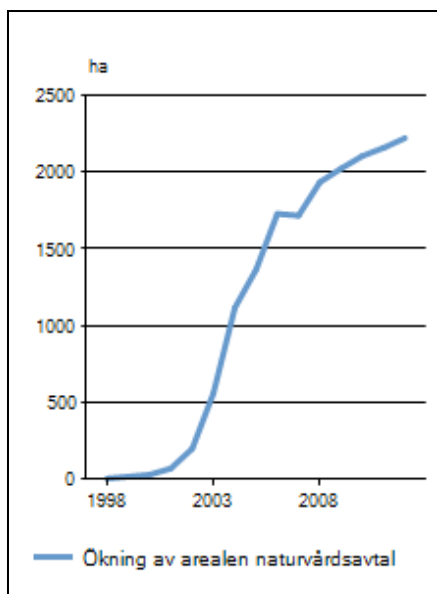


Figure 8 The increase in areas with nature conservation agreements (naturvårdsavtal) (hectares of productive forest land) (Source: Swedish Environmental Protection Agency 2013a)

The goal set by the County Administrative Board of Jämtland within the system for Sweden's environmental objectives for the period between 1999 and 2010 was to include 3800 hectares more of productive forest outside the mountains in nature conservation agreements in Jämtland.

Since 1999, the land area covered with nature conservation agreements has increased with only 2348 hectares of which 2223 is outside the mountainous area. Even though the land area included in nature conservation agreements has been increasing, the increase is still considered slow and the goals for 2010 were not reached by 2012.

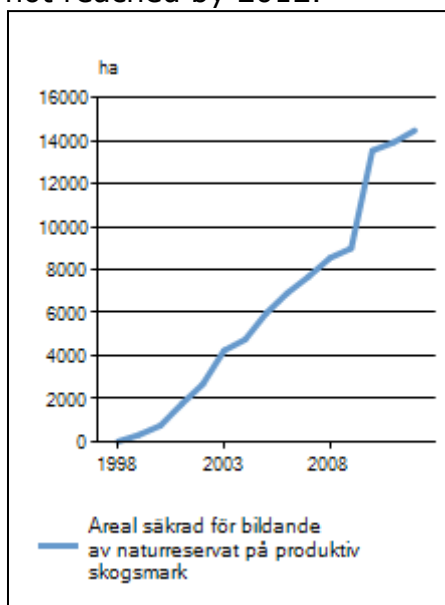


Figure 9 Area of productive forest land in protected as nature reserves (Source: Swedish Environmental Protection Agency 2013a)

The regional goal concerning establishing new nature reserves in the Jämtland is 24 400 hectares. Nature reserves are in most cases set up by a County Administrative Board but also municipalities can establish nature reserves. When a nature reserve is established, the land owners receive a compensation for the

decrease in the market value of the area. The status of an area as a nature reserve is not limited in time. By 2012, approximately 60% of the goal has been reached and 14 470 hectares of new nature reserves has been established. Jämtland is thereby not close to reaching the goal.

Voluntary forest certification schemes

There are also two voluntary certification programmes for forest owners (Forest Stewardship Council and Programme for the Endorsement of Forest Certification Schemes). Forest owners can apply for certification if they fulfil the criteria of the certification organisations concerning e.g. environmental sustainability of forestry. The Swedish formal protection system as presented earlier concerns protection of forest land and nature while the voluntary private certifications concern responsible use of forest and responsible forestry.

The forest land covered with voluntary forest certification of FSC (Forest Stewardship Council) by forest owners in Jämtland was in 1 453 372 hectares in 2011. The land area decreased by 124 891 hectares from the level of 2009. The Swedish Society for Nature Conservation has criticised the FSC certification in a report in which it found significant shortcomings both in how the forest companies live up to the FSC's requirements on environmental concerns and how complaints on forest companies who violated the rules handled at FSC.

Information on the amount of forest land certified with the other voluntary certification of PEFC (Programme for the Endorsement of Forest Certification schemes) is not available at regional level but nationally the amount of PEFC certified forest has been increasing (Swedish Society for Nature Conservation 2013; FSC 2013; PEFC 2013).

Forest energy

It is noted that bioenergy could increase the utilisation of wood residue in Jämtland and the supply of wood fuels for energy production has already doubled between 1990 (less than 800 000 MWh) and 2008 (1,6 TWh). The success depends on, among other things, the demand from district heating facilities owned by local utilities.

In Östersund, the district heating system is fed with forest residues provided by a co-operative (Skogsägarna Norrskog) of 13 thousand small forest owners. It has created a stable demand for forest biomass giving the local forest industry and small forest owners possibility to diversify their business. More than 250 jobs are specialised in the biomass management and transportation (OECD 2011a; OECD 2011b; OECD 2011c).

It has however also been pointed out that the increasing use of forest biomass for renewable energy may have a negative effect on sustainability of the forest sector. Increased biomass production can be expected to lead to parts of the forest land being used more intensively with tree species with shorter circulation periods (The Swedish Environmental Protection Agency 2013a).

Environmental consideration

As noted earlier, the share of formally protected forests within the different protection forms has not increased as expected and the regionally set goals have not been reached concerning habitat protection, nature conservation agreements or nature reserves. The share of harvested forests that are not regenerated is increasing because forests with high natural and ecological value are continuously felled. This is partly because the amount of protected forest land is increasing too slowly. This also has a negative effect on biodiversity.

Environmental consideration needs to be developed in the sector. Especially the awareness and knowledge level of the employees and forest owners concerning sustainable forestry needs to be improved. In case the current rate of felling continues, it is estimated that approximately 75% of the forests below the mountainous areas would be felled by 2020. It is stated that the sector needs to take its responsibility more seriously in relation to for example the availability of old trees and hardwood trees.

In addition to the goals that are followed-up with the indicators presented here, the County Administrative Board of Jämtland set in 2006 other specific quantitative goals such as increasing the amount of old hardwood forests by 10% and the amount of old forest by 5%. However follow-up statistics on whether those goals have not been found.

The County Administrative Board underlines that in order to reach the policy goal of sustainable forests, it is not enough to only use formal protection measures when aiming to create a forest sector that promotes biodiversity, preserves the cultural landscape as well as develops the social values of the forest landscape. The County Administrative Board notes that today large shares of the fells in Jämtland do not fulfil the requirements set in the law concerning environmental consideration.

Consideration for environmental issues needs to be developed and especially the awareness and knowledge level of the forest owners needs to be improved. Also new methods for forestry are needed in order to facilitate more sustainable forestry (Jämtland County Administrative Board 2006; Jämtland County Administrative Board 2012a; Swedish Environmental Protection Agency 2013a).

4.3 Transport

The transport sector employs over 3000 people (approximately 5,5% of all work force). Most of the employees work in land transport services (3,51% of all labour force) and 1,28% of all work force in Jämtland work with warehousing and support services for transportation.

Emissions and energy use

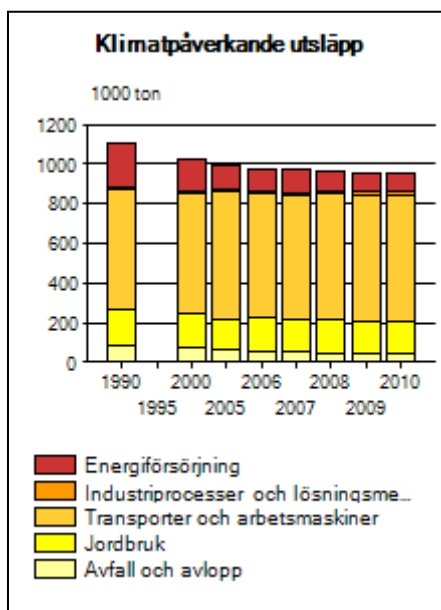


Figure 10 Emissions per sector (energy sector, industrial processes, transport, agriculture, waste) (Source: Swedish Environmental Protection Agency 2013a)

Currently the transport sector stands for 57% of all GHG emissions in Jämtland. In the period of 1990-2010, the transport sector has succeeded in decreasing its emissions only to a minor extent while for example the emissions from energy production have decreased by 57% (see Figure 10).

Therefore climate efforts targeted towards greening the transport sector in Jämtland are essential. It is also particularly important and challenging to work with increasing the energy efficiency of the sector and the use of renewable fuels in Jämtland where distances are exceptionally long, population density extremely low and where the population and business and industry are very dependent on passenger car traffic.

Compared to 7,9% in 2010, 9,8% of the energy used in the transport sector in Sweden was from renewable sources in 2011. Thereby Sweden is already close to reaching the EU goal of 10% of renewable energy by 2020. Regional level information on whether Jämtland is close to achieving the EU goal has not been found. The county transport plan however stated in 2009 that the transport sector in Jämtland is almost entirely still dependent on fossil fuels and has difficulties in decreasing the emissions (Swedish Energy Agency 2012; Jämtland County Administrative Board 2010).

There are few clear or quantitative policy targets found that could be used to study the performance of the transport sector in Jämtland in terms of green economy. The county aims at becoming free of fossil fuels by 2030 and public transportation in Jämtland shall be fossil fuel free already by 2025 but it is hard to evaluate how the county in general is doing at the moment in relation to that goal.

It is however clear that in order to reduce emissions from the transport sector, more efforts are needed in several areas such as municipal planning, increased use of public transport and conversion to renewable fuels (OECD 2011a).

Environmental objectives in transport sector

Of the nationally defined environmental objectives, the objectives of “clean air”, “natural acidification only”, “zero eutrophication”, “good built environment” and “rich diversity of plant and animal life” are prioritised in the environmental work concerning the transport sector.

In applying the Sweden’s environmental objectives, Jämtland set up regional specific goals in 2006. The regional goals that the County Administrative Board especially links to transport are among others increasing the use of renewable fuels and decreasing traffic in densely populated areas, improving air quality, and decreased noise pollution in the mountain areas and less worn-out natural areas.

The objective of good built environment is most directly connected to transport but it has been estimated that the goal cannot be reached by 2020. It is stressed that Jämtland has experienced a vast positive development in terms of efforts related to infrastructure, sustainable planning and sustainable transport.

Environmental objective: A Good built environment
“Cities, towns and other built-up areas must provide a good, healthy living environment and contribute to a good regional and global environment.
Natural and cultural assets must be protected and developed. Buildings and amenities must be located and designed in accordance with sound environmental principles and in such a way as to promote sustainable management of land, water and other resources.”

For example many municipalities have improved their footpaths and cycle paths and the tourist destination of Vemdalen has in cooperation with a train operator started train traffic in order to make it possible to travel to the ski destinations without car. However the analysis points out that the development towards greening the sector is still too slow and the scale is too small. More national economic instruments are needed and national legislation should be more strictly followed.

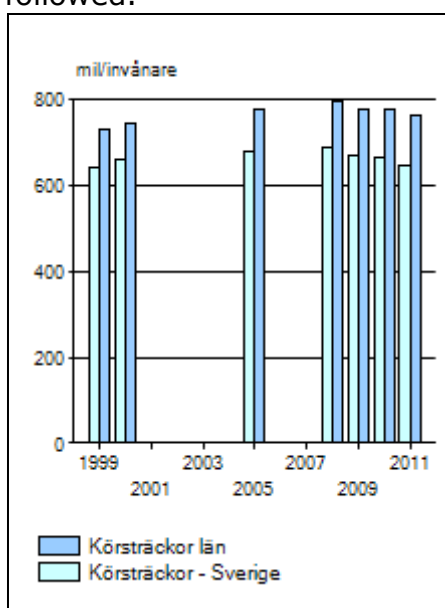


Figure 11 Driving distance in the county (10 km) per inhabitant per year in Jämtland (“Körsträckor län”) and in Sweden (“Körsträckor Sverige”) (Source: Swedish Environmental Protection Agency 2013a)

One of the indicators used to follow the development of transport system is the average driving distance (körsträcka) per inhabitant per year in each county. The transport system in Jämtland is dominated by road transport and Jämtland also have longer average driving distance per inhabitant than Sweden and most other counties.

During the 2000s' the average driving distance has been increasing in Jämtland and was 7650 kilometers per person per year in 2011. Some positive development has been seen during the latest years. However especially the rural sparsely populated municipalities outside the regional centre of Östersund are still highly dependent on car traffic and have very high average driving distances. The dependency on passenger car traffic is the most challenging weakness of the sector in relation to climate and energy issues. Increased travelling and transport costs are some of the most central future threats that would also influence agriculture, forestry and tourism (Jämtland County Administrative Board 2009b; The Swedish Environmental Protection Agency 2013a; Regionfakta 2013).

The share of green cars (miljöbilar) of the total amount of newly registered cars in Jämtland has been increasing between 2004 (less than 5%) and 2008 (almost 20%). In 2009 the share of newly registered green cars of all newly registered cars decreased slightly down to approximately 16%. However, the car stock in Jämtland relatively old and together with the Norrbotten county has had the lowest total share of green cars in Sweden (3,69% in 2011).

The definition of a green car differs between different national authorities and municipalities. New green cars are exempted from road taxes for the first five years in case they fulfil the requirements concerning the weight of the car, its emissions and the used fuel. When it comes to lower fringe benefits for company cars, the calculation is done differently the largest decrease in fringe benefit tax is given to cars that are hybrids or run on biogas or electricity. For example using a biogas car as a company car entitles the owner to a 40% lower fringe benefit tax compared to a conventional vehicle (Jämtland County Administrative Board 2011b; Swedish Transport Agency 2011; Miljöfordon.se 2013; Municipality of Östersund 2009).

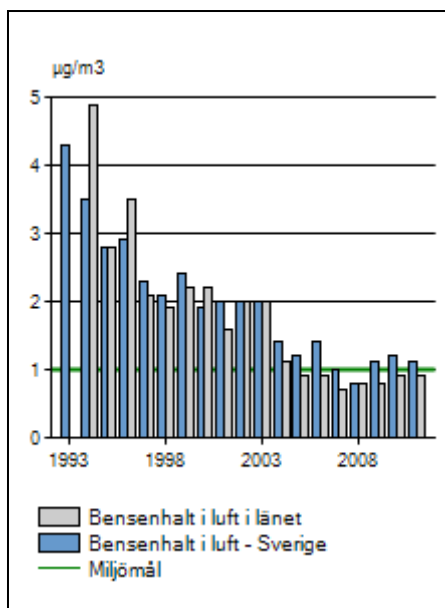


Figure 12 The amount of benzene in the air (in Jämtland and in Sweden in relation to the target) (Source: The Swedish Environmental Protection Agency 2013a)

The development is also followed up by measuring the amount of benzene in the air. In Jämtland, the amount of benzene is below the target and also below the Swedish average (see figure X). It is however noted that the positive development towards decreased amount of benzene in the air has slowed down during the latest years.

Policy initiatives and projects greening the sector

Several large projects and initiatives have been implemented in Jämtland concerning greening of the transport sector. Still the indicator on how large share of the municipalities in the county have programmes concerning sustainability and the transport sectors shows that more efforts are still needed to develop the municipal work. However it should also be noted that of the eight municipalities in the county, only three responded to the survey in 2012.

The municipality of Östersund has been very active in developing "green traffic" (including e.g. promoting the use of green cars and especially biogas, developing cycle traffic and informing about transport sustainability). The municipality has a permanent department for green traffic with two permanent employees and it has successfully worked towards decreasing the climate impact of travels and transport in the municipality.

Östersund has also actively engaged in developing the biogas infrastructure. The vehicle gas used in Sweden is usually a mixture of renewable biogas and fossil natural gas but in Jämtland the vehicle gas is 100% biogas. The biogas produced in the sewage plant Göviken is a secondary resource from the sludge of the sewage plant. 99 municipal cars use biogas and in total there are approximately 300 vehicles in the municipality running on biogas. It is estimated that in 2012 the use of biogas produced 1038 tons less of fossil carbon dioxide than would have been produced if only fossil fuels would have been used (Municipality of Östersund 2013).

The Jämtland County Administrative board coordinates activities for fossil fuel free Jämtland in cooperation with private and public organisations. The County Administrative Board has drafted an action plan on fossil fuel free Jämtland where renewable fuels, public transportation, improved railway transportation, more effective goods traffic, biofuels from forestry and agriculture, biogas from agriculture and waste as well as accessibility without travelling are some of the focus areas.

It is stated among other things that all petrol should include 10% ethanol and that charging infrastructure for electric cars shall be included in physical plans in all municipalities. Videoconference systems should be developed in order to decrease the need for travelling and it would be important to among other things ensure the availability of night trains even in the future.

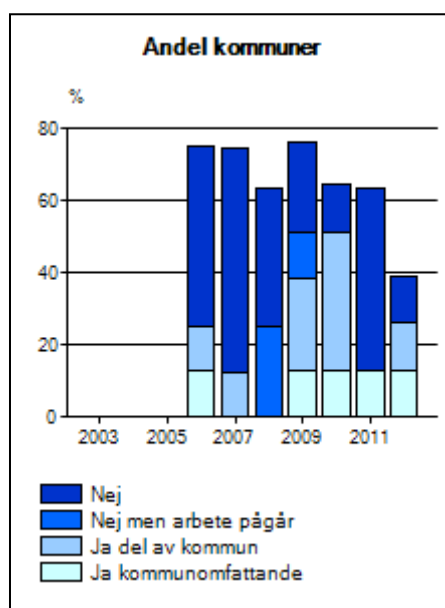


Figure 13 Share of municipalities' answers to a survey on whether they have programmes for sustainable transport (fields: no, no but a programme is under construction, yes covering parts of the municipality, yes covering the entire municipality)

Organizations can apply for funding for projects related to the goal of fossil fuel free Jämtland for example in transport, renewable energy and tourism sectors. The programme has allocated funding for example to the municipality of Åre for providing bus tickets free of charge to pupils, to the regional council of Jämtland for developing a biogas strategy and to the Swedish Forest Agency for organising a seminar on the forest sector in Jämtland and what the goal of becoming fossil fuel free by 2030 means for the sector (Jämtland County Administrative Board 2013d; Jämtland County Administrative Board 2013e).

Green Highway

The most important current project concerning greening the transport system is the INTERREG project Green Highway with Swedish and Norwegian partners focusing on fossil fuel free transport. From Jämtland, the municipality of Östersund is one of the partners.

The project has created a green transport axis along a renewable energy belt as well as investments in electric vehicles, charging infrastructure, renewable fuels and testing and development. It is used as a large laboratory for sustainable transportation.

The project also provides information and increases awareness of sustainable transport. Among other activities it provides a map on its homepage showing places to charge or fuel up green cars (ethanol pumps, biogas pumps, biodiesel pumps and charging stations). (OECD 2011b; Green Highway 2013; The Swedish Environmental Protection Agency 2013).

4.4 Tourism

Tourism is one of the major economic activities in Jämtland. Approximately 11% of the work force is employed in tourism-related trades. The share of workforce in tourism-related trades was continuously increasing from 2003 (9,8%) until 2010 (11,5%) but decreased with 0,5% between 2010 and 2011

It has not been possible to find indicators that directly measure the greening of the tourism sector in Jämtland. The efforts related to transport are closely related to tourism as well and of the environmental objectives tourism can relate to several targets in the environmental objectives system. Jämtland County Administrative board connects the tourism sector development to the national and regional environmental objectives and sub-objectives.

For the development of sustainable tourism, it is of particular importance to decrease waste and toxic chemicals, improve the energy efficiency in buildings, decrease electricity use and protect various kinds of cultural and natural values as well as increase awareness of environmental issues.

Especially the environmental objective of magnificent mountain landscape is related to tourism as tourism is much concentrated in the mountain areas. Jämtland is close to reaching the goal of magnificent mountain landscape which is one of the objectives where tourism activities have a significant role. It is however noted that increased tourism and construction of recreational housing are possible threats.

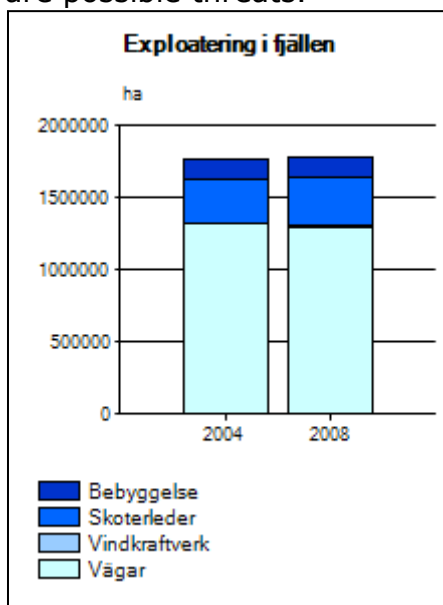


Figure 14 Exploited mountain area in 2004 and 2008 (built-up areas, scooter tracks, wind mills, roads)

Environmental objective: A magnificent mountain landscape

"The pristine character of the mountain environment must be largely preserved, in terms of biological diversity, recreational value, and natural and cultural assets. Activities in mountain areas must respect these values and assets, with a view to promoting sustainable development.

Particularly valuable areas must be protected from encroachment and other disturbance."

In 2009, approximately 25% of the land area in the mountains was exploited. The share of utilised land area had not increased since 2004 and the share of different types of land use in the area had also remained largely similar between 2004 and 2008 (see Figure 14).

In the mountainous areas tourism has however a negative local influence on land and vegetation. For example the use of off-road vehicles has increased extensively during the last 25 years which has a significant influence on the land

and vegetation. The actual influence that tourism centres have needs to be investigated better.

Two on-going research projects are looking into the conflicts related to outdoor activities in the mountains. Earlier studies have already shown a conflict that exists between on one hand the wish to maintain an untouched landscape and protect the species and on the other hand the aim to develop accessibility of the areas and tourism. A balance must be found in order to be able to both continue developing tourism but also protect plant and animal species and provide preconditions for reindeer husbandry. (Jämtland County Administrative Board 2007; The Swedish Environmental Protection Agency 2013a).

Sustainable transportation to the tourist destinations is crucial for the development of sustainable tourism in Jämtland. Greening of the transport sector is thus required if the sustainability of the tourism sector is to be improved, even if the environmental effects of the transport system are usually counted as consequences of the transport system and not tourism. The tourism associations are worried about the effects that decreasing accessibility by train can have on the development of tourism.

From interviews and regional and local strategies it can be concluded that developing sustainability in tourism is a priority in Jämtland. There has been several projects concerning the sustainability of the sector in the county and at the moment the tourism association Jämtland-Härjedalen Tourism is active in a project on sustainable tourism with a focus on developing a quality assurance system. Also the leading tourism research centre at the Mid Sweden University supports the development of sustainable tourism in the county.

The municipality of Åre where the biggest tourist destinations are located has worked with developing sustainable tourism. In cooperation with other actors it has produced environmental strategies and visions for the ski destination and related tourism businesses. Also the main tourist attraction of Åre (that mainly focuses on activity tourism and skiing) has been allocated funding from the Swedish Agency for Economic and Regional Growth, the Regional Council and the municipality of Åre for developing into a sustainable tourist destination.

Jämtland has produced a regional strategy for developing sustainable nature and culture tourism in the county. Anchoring the strategy at local level has taken place via e.g. a project where the large tourist destination enterprises could get funding for their own project but needed to take into consideration the goals of the regional sustainable tourism strategy.

The strategy states that based on a SWOT analyses, Jämtland has good preconditions for developing sustainable tourism. The strengths of the tourism sector in the county are the existing natural and cultural values, strong brands, and the small-scale and genuine nature of tourism, the broad supply of tourism services as well as strong tradition of tourism industry in the county.

The challenges for developing sustainable tourism are attitudes towards nature and culture, lacking competence in marketing and communication, the geographic location and low population density of the county as well as lacking cooperation and coordination.

The future threats identified in the SWOT analyses were related to lacking consideration for natural and cultural values, increased impacts of tourism on nature and environment, insufficient infrastructure, increased international competition as well as political and economic factors.

When it comes to potentials, it has been noted that tourism can have potential in diversification of the rural economy in Jämtland. The amount of enterprises combining traditional agricultural activities with tourism is increasing in Jämtland and agriculture enterprises have good preconditions for developing sustainable tourism. Also interest for small-scale food production has strongly increased the latest years which has already contributed to developing the nature and cultural tourism (Jämtland County Administrative Board 2007).

5 Key milestones

In the following chapters, the information is based on interviews conducted with local and regional stakeholders in Jämtland during Spring 2013. A list of interviewees and their organisations can be found at the end of this document and interview protocols can be found in the annex.

According to the interviewees sustainable development has been systematically promoted in Jämtland especially since the 1990s'. In particular the introduction of the UN Agenda 21 influenced the environmental work at municipal level in early 1990s'. Even though municipalities may already had been working with individual environmental issues (such as waste management), introducing municipal Agenda 21 programmes facilitated more systematic work developing towards including more sectors.

In the forest sector, the new national forest legislation established in 1990 had a significant effect on the development of sustainable forestry. Since the 1990s', issues related to sustainability have been taken into consideration more in the sector. EU policies have played a less important role as milestones in the forest sectors.

In agriculture in Jämtland, a new national support scheme for alternative agriculture established in 1980s' initially brought the issues related to ecologic agriculture into the official agenda even though a group of individual farmers had been promoting the issue already earlier. Based on the decision to start a national support scheme for alternative agriculture, a decision at regional level in Jämtland was also made to strive for making all agriculture in the county ecologically sustainable.

A regional level policy for developing sustainable tourism established in 2008 has been central in putting sustainable tourism on the agenda. The initiative for the regional strategy originally came from the government that in 2006 regulated that the Jämtland together with some other counties with significant tourism activities shall draft programmes for developing sustainable nature and culture tourism.

Tourist enterprises have been able to apply for funding through a project in the county where they had to follow the sustainability strategy. Thereby the strategy has been strongly anchored in the local level. According to the regional stakeholders, the regional strategy has therefore had a bigger effect in practice on the development of the sector than EU policies.

Concerning the development of the transport sector, only a representative of the largest municipality of the county, Östersund, was available for comments. Therefore the information concerning the transport sector in this report is mostly focusing on Östersund but as it is the largest municipality in the county, the work it does can also be considered very central for the accessibility and the transport sector of the entire county.

For the development of the transport sector in Östersund municipality, it was central that the sector was already in the 1990s' identified as one of the most important sectors in sustainable development. Systematic development work

with developing the transport sector started in the municipality in 2001 and the availability of national funding via local investment programme (lokala investeringsfund) was essential in establishing sustainable transport as an important issue in the municipality. Receiving 50% of the funding from the state facilitated motivating the local politicians about the importance of the issue.

The municipality has also received project funding from the EU for its projects related to green traffic and after several years of working with sustainable transport with external funding as the main driver, the municipality set two permanent vacancies for developing sustainable transport sector (Interviews).

6 Drivers, barriers and enabling conditions

6.1 External drivers

In the interviews, a number of key spatial and territorial factors influencing the development of the sectors were mostly considered as hindering instead of enabling conditions.

The peripheral location and long distances within the county effects the development of the sectors as the transport distances are long for agricultural or forest products and the travelling distances for tourists from other counties are long making it difficult to travel to the tourist destinations in a sustainable manner. Sustainable transport connections are therefore seen as central in developing all the sectors. On the other hand, the peripheral and rural nature of the county is also a factor that provides possibilities for agriculture, forestry and nature tourism.

The climate conditions for sustainable agriculture in Jämtland have been good which has been an enabling condition for the development of organic agriculture. Pesticides are not needed to the same extent as in regions in Southern parts of Sweden and therefore it has been relatively easy to develop organic agriculture. Preconditions for organic agriculture have also been good because forage cultivation has been important and it has been possible to grow forage for the feedstock that produces manure to the cultivation. The market demand for ecological food products has also been a condition driving the development of sustainable agriculture earlier but it has been noted that during the latest years the market demand has not been increasing at the same rate as production. As Jämtland is mainly a rural county with a peripheral location, the inhabitants have traditionally been living close to the nature and are involved in a wide range of outdoor activities. It has been noted that it possibly can also have influenced the way in which environmental and sustainability issues have been taken into consideration in Jämtland. It is easy for the inhabitants to see the consequences of non-sustainable decisions directly in their surroundings.

For the development of the sustainable tourism, the preconditions of the county are good. For instance, the largely untouched nature is an important value driving the development of the tourism sector. Also the small scale of tourism industry and the strong local brands in the sector have been considered as strength of Jämtland together with Jämtland being traditionally a tourism county with strong traditions of tourism industry (Interviews; Jämtland County Administrative Board 2008).

6.2 Internal drivers: policies, institutions, financing

6.2.1 Insights on efficiency of EU policies in the region

In most of the sectors, the efficiency and importance of EU policies have been considered significant. The municipalities and the regional actors work actively with sustainability issues and often aim at setting goals that are higher than the EU objectives.

At the same time however it is stressed that the municipal self-government strongly influences the implementation of EU policies at local level. Political will at

local level can function as an essential driver towards greening the economy. At the same time however a lack of political will at the local level can break the chain of decision making from EU level to local level. Strong and clearly set EU goals can function as drivers influencing the local level policy making and implementation but in some cases in Jämtland the current EU goals and guidelines have been considered too weak and seen by the decision-makers mainly as guidelines. This clearly influences the efficiency of EU and national policies as policy drivers as the EU policies do not always reach all the way down to the local level where they should be practically implemented.

When it comes to the specific sectors, the importance of EU policy has been considered minor for the development of forestry and tourism as there is no major common EU policy for those sectors. The national policy and the certification systems have been particularly significant for the development of sustainable forestry.

In agriculture, the design of the EU support system and the related requirements have strongly influenced the development of the sector and have been considered the most significant individual drivers and influences.

It is emphasized that a longer-term approach in EU agricultural policy would be needed and the planning horizon should be lengthened in order to increase efficiency of EU policy as a policy driver. Conversion to organic farming demands several years of work by farmers and the changing regulations and goals cause insecurity which hinders the transition to organic farming. Further, it has been stressed that even though the EU support system promotes ecological production, the sector is dependent on market demand. The market demand for ecological products has been decreasing in Jämtland but as the EU support for ecological production is higher, the supply of ecologic products exceeds the actual market demand. The regional actors consider that organic agriculture is dependent on increasing demand and without demand cannot be developed much further. In general, the prices of organic products are higher than the prices of non-organic products which is mainly caused by the higher production costs and lower productivity in organic agriculture (Interviews; Jörgensen 2001). Also, concerning the transport sector, more long-term approach from the EU level is called for by the municipal actors in order to make it possible for municipalities to make decisions on investments. Uncertainty about future EU policy hinders the development work at municipal level related to transport sector (Interviews).

6.2.2 Insights on efficiency of national, regional and local policies – multi-level governance

In general, the local and regional actors in Jämtland stress the need for more national level support for the development of sustainability in the sectors as well as the need for more long-term approach from both the national and the EU level in order to facilitate investments and work related towards the policy goals by local authorities, entrepreneurs and inhabitants.

National funding has significantly enabled development work towards greening the economy. Especially funding from the national Climate investment programme (klimatinvesteringsprogram) has been allocated to projects in e.g. green transport. In 2012, the County Administrative Board also started a new programme "climate million" (klimatmiljonen) where they allocated funding from the national level authority Swedish Energy Agency to projects that contribute to reaching the goals of the regional climate and energy strategy. It is emphasised that the goals related to sustainability at the national level are relatively low from the regional perspective of Jämtland and higher targets and stronger and more coordinated efforts would be needed.

The climate investment programme

The Swedish Government has used a national Climate Investment Programme as a tool for reaching the Swedish climate objectives. Municipalities and other local actors have received funding for long-term investments that reduce greenhouse gas emissions. In total, the state has supported local climate investments with 1 175 million SEK. The taken measures have decreased GHG emissions in Sweden with 631 000 tons by year (approximately 1% of the Swedish emissions). The measures also have led to a decreased use of fossil energy (by an annual 2,2 TWh) and increase in the use of renewable energy (an annual increase of 1,6 TWh) as well as increased energy efficiency. Furthermore, the programme has contributed to increased cooperation and exchange of experience between different actors as well as especially facilitated the development of environmental technology (in particular the development of biogas) (The Swedish Environmental Protection Agency 2013c).

The regional level is not very significant in the Swedish governance system. The County Administrative Board implements the national policy at regional level but in some cases their possibilities to influence can be small because of the strong local level and its self-governance.

Also the Regional Council of Jämtland states that it can be challenging to establish local anchoring of its environmental goals even though the regional council consists of the municipalities and the county council. For economic reasons the policies introduced at national and regional level are often not seen as important by the local level actors. The local level decision makers may lack knowledge about the possible future savings related to green investments and therefore not consider them if the municipal economy is weak. Jämtland has a large amount of small municipalities with weak economy that thereby also have limited possibilities to implement the measures introduced at the regional and national level.

In forestry, the national policy and legislation has been considered important for the development. Actors in Jämtland lack the resources to develop transport solutions to increase exporting the wood residue to other regions and it is stressed that the state should contribute to finding solutions. Furthermore, it is

considered that stronger national policy related to biodiversity for the forest sector would be needed.

More support from the national level is also needed in the tourism sector. The local level tourist destination enterprises experience that they get too little guidance and support from the national level in order to reach the environmental goals set by the state. Now however one of the biggest tourist destinations in Åre was granted funding by the Swedish Agency for Economic and Regional Growth for developing sustainable tourism.

National level and EU funding have been crucial for the development of sustainable transport in Jämtland. Based on the work that was first done with external funding, the municipality of Östersund established two permanent positions for developing green traffic. Developing green traffic has been established as one of the ordinary municipal activities and the development work is no longer only project-based and dependent on external funding.

Even though the national level policy has been central to the development of sustainable transport, it is also stated that more long-term approach would be needed in order to make e.g. investment decisions. So far for example biogas cars and other green cars that are company cars have entitled the owner to 40% lower fringe benefit tax compared to conventional vehicle which has meant hundreds of crowns saved tax money for every green car. Investment decisions cannot be made in situations where it is unclear how the regulations on for example the lower tax for the use of green company cars will be formulated the following year (Interviews; Municipality of Östersund 2009).

In relation to sustainable tourism and sustainable transport, it is stressed that national level efforts would be needed to ensure that it is possible to travel sustainably to the region from other parts of Sweden and from abroad. Now for example, the night train traffic has been reduced and many actors see it as development to wrong direction in terms of greening the economy (Interviews).

6.2.3 Development ambition of the region concerning green economy

According to the interviewees, sustainability issues are in general high on the agenda in Jämtland. They are discussed in connection to many different sectors which can also be noted when observing the regional strategy documents related to regional development, environment, climate and energy. For example the biggest municipality of the county, Östersund, sets goals that are higher than the ones required by EU policy. For Östersund, green economy or sustainability has become part of the brand of the municipality and also therefore the municipal actors find it important to keep developing the work.

Cooperation with other actors and other municipalities is an important part of the environmental work of the municipality of Östersund. Östersund participates in a state-funded project with some of the biggest Swedish cities for discussing issues related to electric cars and it is a member of "an environment municipality network" of 20 municipalities who meet, discuss and further cooperates with regional level actors, state agencies and enterprises. Östersund was also chosen by the Swedish Society for Nature Conservation to be the best climate municipality in Sweden in 2010, and they are a member of the European wide

Covenant of Mayors. Similarly, the work done by the municipality related to traffic has further been awarded at EU level as it received the second prize in the European mobility awards in 2013.

The environmental management system (miljöledningssystem) of Östersund has been an important factor in its work towards increased sustainability. All units of the municipal organisation have to draft their own environmental goals and measures and the implementation is monitored by both the municipal management and outside auditors. Thereby sustainability issues have been included cross-sectorally in the municipal organisation.

When green economy is discussed, the issues related to environmental sustainability dominate, but it has also been stated that it is important to think about all of the dimensions of sustainability.

The municipal actors in Jämtland also underline that in some cases the focus in the discourse is still on economy instead of environment. It is not always seen by the municipal decision-makers how the transition to green economy and investments in greening the economy could bring economic benefits.

At local level, economic arguments can still often prevail. It is dependent on local politics how ambitiously the green economy is developed. It would be important to further strengthen the political will related to green economy. There is not always sufficient trust in greening the economy and in that investments in green economy can bring new opportunities for the municipalities and the county. Often times it is perceived as difficult to make the future savings resulting from upfront investments in environment or public health investments as visible as they need to be to promote such investment.

According to the Swedish Environmental Protection Agency, the County Administrative Board in Jämtland is performing well in terms of implementing an environmental management system. The County Administrative Board has according to the study however, the second lowest performance of all state actors in Sweden when it comes to internal environmental policy, environmental objectives for their activities as a public authority and reaching the objectives. The study looked into among other things the internal environmental policies, goals for the activities of the state actors and whether the goals are can be measured and followed up (Interviews; Swedish Environmental Protection Agency 2013b).

6.2.4 Role of Structural and cohesion policy funds in the region

ERDF and ESF funding for projects have been considered very important for the development of green economy in the county. For example, projects developing green transport sector (e.g. INTERREG project Green Highway) and sustainable tourism have been successful.

The county however consists of very small municipalities for whom the bureaucracy and requirements concerning own funding hinders the participation in projects and programmes. Small municipalities may not have enough resources to administrate big EU projects and may lack the needed own funding that is required in order to participate. In some cases the interviewees state that

the municipalities could participate and have a smaller part in an EU project but it is not considered ideal either as it limits the possibilities the municipalities have for setting the agenda of the project and making sure that the project actually can benefit the municipality.

Funds allocated via the Rural Development Programme for Sweden are also of significant importance for Jämtland. Many farmers are dependent on the agricultural support. The form and requirements of the support system have a clear impact on the development of the agriculture in the county.

In addition LEADER projects have been developing sustainability of agriculture and for example aiming at increasing its resource efficiency.

In addition to the funding available for development projects, also research funding granted for the Mid Sweden University is important as the university conducts research especially related to the development of the forest sector and tourism (Interviews).

6.2.5 Role of regional and local funding

The County Administrative Board and the Regional Council of Jämtland have been providing complementary funding to EU projects. The municipality of Östersund is in the process of developing a new local funding form for green ideas. It would be funded by a municipal carbon dioxide fund where it would be possible to set money to climate compensate for the CO₂ emissions caused by travelling (Interviews).

6.2.6 Role of economic instruments

It is noted that economic incentives should be further developed in order to promote transition to green economy. In particular a possibility for differentiated taxes for environmentally certified products has been suggested. Developing the tax system is mentioned as an important possible way to develop green economy that has not been sufficiently implemented. The tax system could be developed to steer more clearly towards increased sustainability.

For the development of green traffic in Östersund, the system of reduced taxable benefit for the use of green cars has been central but the rules from the national level are shifting and at the moment it is unclear what kind of rules will be implemented from 2014 onwards. That makes it difficult for the actors to know what kind of transportation to invest in.

New green cars have also been exempted from vehicle tax but the current rules only apply until the end of 2013. It is unclear for the municipal actors what kind of rules will be applied after that which also makes decision-making concerning investments difficult. In relation to green traffic and especially green cars, a longer-term approach from the national level would be needed (Interviews).

6.2.7 Others: voluntary schemes; innovative financing mechanisms; green public procurement

The role of green public procurement is in general agreed by the actors in Jämtland to be important and full of potential but it is also noted that developing innovative green public procurement is demanding and that the municipalities have not come very long in developing it. Especially the public procurement of

sustainable food products from the Jämtland is challenging since producers are small and cannot produce the amounts that are required by the municipalities. Public procurement in Sweden is regulated by law and the related EU directive. The law does not hinder public procurement from taking environmental sustainability into consideration but according to the interviewees, there has still been more focus on low prices instead of organic food production and green issues in public procurement in many cases. As one possible way to try to promote the use of locally produced ecological food, it has for example been proposed that the municipalities would base their public procurement on seasonally available products (Interviews; The Swedish Environmental Protection Agency 2013d).

The interviewees from both regional and municipal level stress that municipalities could still be clearer in their goals and its ambitions in order to promote sustainable development via public procurement. Clear rules for green public procurement would send a strong message to other actors and consumers. The municipal actors however also call for more long-term approach from the EU in order to be able to make investments decisions (Interviews).

According to the Swedish Environmental Protection Agency, it would be essential to increase awareness of the possibilities of green public procurement. In many cases, municipal authorities may lack knowledge about how to implement green public procurement and set environmental criteria. This has been true even in municipalities that have set general guidelines concerning sustainable procurement as available tools or best practice examples have been missing (The Swedish Environmental Protection Agency 2013d).

In transport sector, the role of municipality in leading by example and promoting the development by for example building an infrastructure has been successful. It has been shown that if the municipality provides the needed infrastructure, the inhabitants are encouraged to invest in for example electric cars. Green public procurement has also been used when procuring subsidized transportation service for the disabled. It has been required that the used taxis are green cars. Also the buses in Östersund run on biogas because it has been required in the municipal public procurement.

For the development of sustainable forest sector in Sweden, the certification systems of Forest Stewardship Council (FSC) and Programme for the Endorsement of Forest Certification Schemes (PEFC) have been important. It was however noted in the interviews that the voluntary certifications administrated by private actors do not always function properly as no forest owner has ever been expelled from any certificate. The regulations of the certificates should be sharpened and they should be further developed. As noted in chapter 4.2, also the Swedish Society for Nature Conservation has criticised the FSC for the shortcomings of the companies when it comes to living up to the requirements of the certification system as well as for how the complaints on forest companies violating the rules are handled at FSC (Interviews; Swedish Society for Nature Conservation).

6.3 Description of problems and barriers encountered within sectors

The main barriers hindering the development of green economy in the selected sectors identified by the regional stakeholders are related on one hand to the peripheral location of the county and on the other hand to the lack of political will at local level and the lack of long-term approach from national and EU level in policy making. Also challenges in implementing the general EU policy in Swedish agricultural and forest conditions are hindering the development (Interviews).

Peripheral location

The peripheral location of the county influences the development of all sectors but is particularly linked to the transport and tourism sectors. Functioning public transport from within the county and outside the county is needed but it is stated that some actors still see car-dependency as unproblematic. Also solutions related to exporting the surplus twig for bioenergy from the county would be needed. The raw material does not tolerate long transport distances and transportation is challenging from Jämtland to bigger regions (Interviews).

Insufficient political will

Insufficient local level political will can influence and hinder the development of green economy. Partly because of the strong municipal self-governance in Sweden, the development of green economy is dependent on political will which varies between municipalities. The local decision-makers may not always be sufficiently aware of the possibilities related to green economy and straightforward economic arguments may still be considered more important. Economic issues are still in some cases considered superior to environmental issues and the decision-makers may not see the potential of green investment and the related economic possibilities. Consumption patterns also influence the development of green economy but the local decision-makers again may not be willing to make uncomfortable decisions that go against the current consumption patterns in for example spatial planning (Interviews).

Lack of long-term approach in policy

Further, the EU and national level policies are not always strong enough and can be considered by the local actors as simply guidelines that do not necessarily need to be fully followed which naturally can hinder the development in case the municipal actors do not adapt the objectives.

In agriculture, the lack of long-term approach from the EU also functions an obstacle for the development. Farmers are very dependent on the support schemes but are not aware of what will be required to receive support in the future. Adjustments in farms to fulfil the requirements related to organic agriculture require long time periods while the requirements can already have changed before the conversion is ready. Long-term approach is needed so that the farmers will have long-term goals to strive for. Planning horizon until 2020 is not considered long enough. Also clearer goals are needed.

It is also problematic that the EU level regulations are not always applicable in Jämtland because of the regional conditions. In Sweden traditionally there has been a lot of pasture land with trees but according to EU they cannot be considered to be pasture land. It is thereby not possible to get EU support for pasture land with trees. Pasture lands with trees promote biodiversity but

because of the rules, some farmers fell trees in order to receive EU aid and fulfil the requirements. The system influences the development towards less biodiversity and less green agriculture.

Also in developing green traffic, the lack of long-term approach from the EU and state is considered hindering the development. Public authorities and consumers do not know what to invest in as the future regulations and rules are unsure concerning for example reduced taxable benefit of green cars or the definition of what a green car is. It is difficult to promote issues related to for example green cars if it is unclear what the definition of a green car will be in future policy or what kind of cars for example tax benefits are applicable for. In addition to lack of long-term approach, also the lack of clear and gathered efforts towards developing the sustainability of the transport sector can function as an obstacle (Interviews).

Insufficient national support for sustainable tourism

In tourism sector, the lack of national level support and guidance for the tourism enterprises hinders the development of sustainable tourism sector in Jämtland. According to the entrepreneurs, the environmental goals cannot be reached if the enterprises do not get more guidance and financial support from the state (Interviews).

Insufficient market demand

In agriculture, the lack of market demand for organic products is a major obstacle for the development. EU support functions as an incentive to produce more organic products than the market demands (Interviews).

Demographic challenges

The population in Jämtland is aging and 24% of the active work force in Jämtland is expected to retire between 2008 and 2018. The demographic development is recognised as a challenge for the development of the county. Lack of work force is expected in many parts of the county and there is a need for both low and high qualified labour force in all sectors (Interviews).

The county prioritises competence development and measures for improved matching of labour supply and demand in its development strategy. In agriculture the large share of aging farmers and the decreasing active agricultural activities are discussed for example in connection to environmental issues where the development can give clear implications in landscape. The Rural Development Programme also identifies difficulties in finding competent labour force as a possible threat for the development of the sector (Jämtland County Administrative Board 2009a; Jämtland County Administrative Board 2012a; Swedish Environmental Protection Agency 2013a).

Also in forestry, it is challenging to find competent educated employees. There are also large variations in the competence level amongst both employees and forest owners. The low competence and knowledge level among the land owners and other actors active in forestry can also have consequences in taking environmental issues into consideration which is why it is considered essential to increase the awareness on the issues (Jämtland County Administrative Board 2012a).

7 Territorial conflicts

7.1 Conflicts of interest between sectors

The main territorial conflicts regarding the selected sectors are related to land use and use of natural resources. In particular there are conflicts of interest between wind energy, reindeer husbandry and tourism (Interviews; OECD 2011a).

Jämtland has large areas with potential for wind power. Wind power development is negatively influenced by the county wanting to present a landscape of undisturbed forests, mountains and waters with low human impact as the extensive tourism industry is dependent on those qualities. Tourist businesses do not want to introduce wind power in their surroundings because they are afraid it would have a negative impact their business.

Further, the municipalities are in some cases against developing wind energy as the local politicians may be afraid of losing their political consensus. There may also be low understanding of the development potential of wind energy. Municipalities have complete control over land use which has a further negative effect on the development of wind installations (Interviews; OECD 2011a).

There is also a conflict between reindeer farming and extensive outdoor tourism. A process of establishing a new national park in Jämtland is on-going and it is certain areas may be taken (Interviews; OECD 2011a).

7.2 Conflicts within sectors

It is noted that it is not always unproblematic challenging to combine the different interests especially between tourism and outdoor activities and the reindeer farming. In the interviews it was noted that for example in forestry, the definitions of sustainability and what kind of actions are sustainable can sometimes be conflicting. A young fast-growing growing forest can bind a lot of carbon dioxide while an older forest does not bind carbon dioxide at the same level but has other values related to for example biodiversity and also contains recreation value (Interviews).

Also increased use of forest biomass can be in contrast with the need to protect the land for the conservation of biological diversity. Furthermore, even though Jämtland is already extensively producing hydropower, some conflicts of interest concerning the conservation of biodiversity of water exist. (OECD 2011a; OECD 2011b)

8 Assessment of the regions' potential to develop green economy in the future

8.1 Distance to target/best performers/technical potential

It is difficult to provide clear results concerning distances to policy targets concerning each of the sectors. In most cases clear sets of quantitative targets are not provided. The website of the Sweden's environmental objective system provides information concerning whether the more general level environmental objectives can be reached as well as information on several indicators. Further information can be found in this report in chapter 4.

More quantitative information and more detailed follow up would be needed in order to evaluate the development and the potential of each sector. In order to respond to the trends of the region with policy, performance and potential should be measured in a more organised and collected manner. At the moment, the indicators and the follow up of the environmental objectives system are being updated at national level and more quantitative targets will be set up in order to be better able to evaluate and analyse the development. According to the Swedish Environmental Protection Agency, similar focusing of the goals is needed also at regional level.

According to the interviewed regional actors, agriculture, forestry, tourism and transport are central to the development of green economy in the county and will be prioritised also in the future hence a potential for development. Furthermore, potential is seen also in the energy sector and especially in developing wind energy and the utilisation of forest biomass for energy purposes (Interviews).

Agriculture

In agriculture, Jämtland has already reached the national policy target of 20% of organically cultivated areas. In 2011, over 20% of the total agricultural land in Jämtland was fully converted organic. The preconditions for organic farming are good in Jämtland and the preconditions are largely expected to remain good also in the changing climate conditions.

In the interviews it was noted that the greening of the agricultural sector in Jämtland is now also to a great extent dependent on increasing market demand. At times, farmers in Jämtland have been forced to sell organic milk as non-organic because there has not been sufficient market demand for the more expensive organic products. It has been stressed that the share of organic agriculture and certified products cannot increase unless the market demand increases. There also green public procurement could have an important role favouring local organic production.

When it comes to pasture land, Jämtland has not been able to reach the goal of keeping the amount of pasture land at the level of 2005. This largely depends on the decreasing amount of milk producers and the resulting decreasing amount of grazing livestock. It is expected that some areas in the county will become overgrown unless they are actively restored.

The development of the agricultural landscape is strongly influenced by the structural change in agriculture and its decreased profitability. Positive development has however been taking place concerning awareness of the importance of agriculture and food production among the general public. The demographic challenge of aging farmers can be considered as one barrier to greening the sector and the decreasing number of farmers can have a clear influence on the agricultural landscape and thereby also biodiversity. Small trends amongst young generation concerning interest in agriculture as self-supporting life style have however arisen and some small-scale potential may be possible to arise to develop the sector (Interviews; The Swedish Environmental Protection Agency 2013a).

It is seen that there is some potential in producing energy crops in agriculture but the scale is smaller than in forestry. The development has this far been slow and also the profitability of producing energy crops has been low. In order to increase profitability and make use of the potential, among other things better sales and improved infrastructure are needed.

Energy crops can become a way for diversification of business for individual farmers but the County Administrative Board stresses that the potential is highly dependent on profitability, energy prices and political decisions. It is noted that the local energy distributors at the moment have good access to biofuels from forest which influences the local demand for energy crops from agriculture.

The County Administrative Board identifies that in connection to the climate change, areas that are now used for animal production may in the future be more suitable for energy crop. Competition and conflicts between using land for food and energy production may arise (Interviews; Jämtland County Administrative Board 2009b; Jämtland County Administrative Board 2011a).

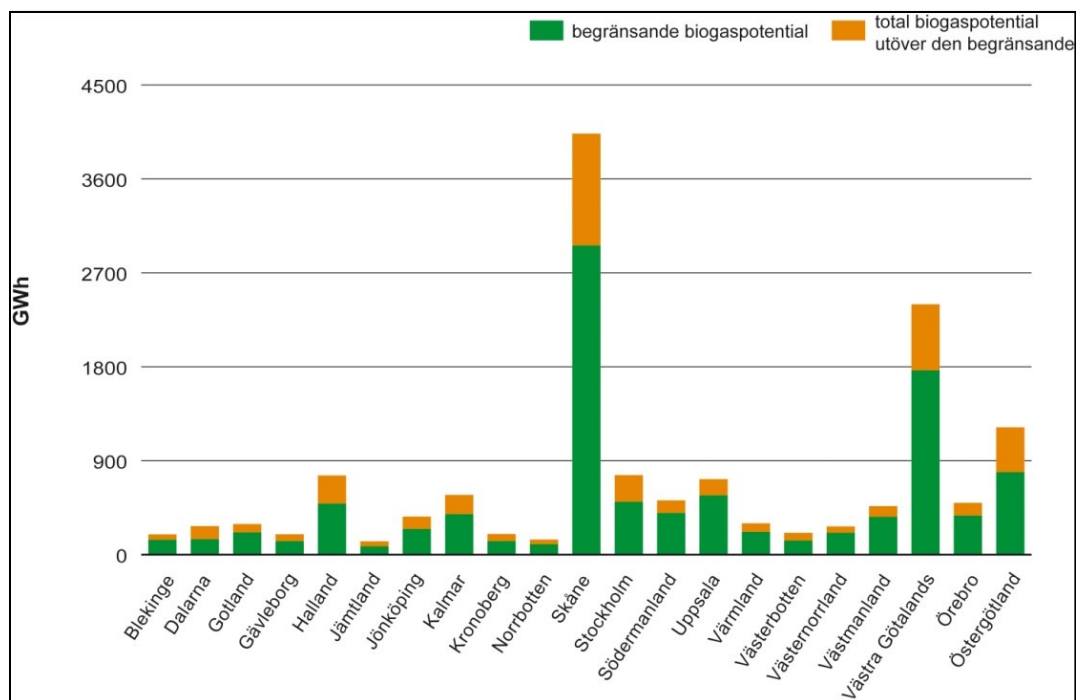


Figure 15 Biogas potential per county (Source: Biogasportalen)

Agriculture can become a distributor of energy in form of biogas that can be produced from manure and waste (Jämtland County Administrative Board 2009b). Detailed information on the potential of biogas potential specifically in agriculture has not been found but the new action plan for fossil fuel free Jämtland states that the possibilities should be further investigated.

The development of small-scale tourism can also have potential in diversifying the rural economy and the amount of farmers producing also tourism activities (especially fishing and hunting) has been increasing (Interviews; Jämtland County Administrative Board 2012a).

Forestry

In forestry, Jämtland has not been able to reach the goals for increased protected productive forest area. Also in general, the environmental consideration in the sector needs to be increased. The knowledge level varies extensively among forest owners and employees and in order to ensure greening of the sector, it would be important to raise awareness in both groups. If the current felling rates continue, it is estimated that 75% of the forests below the mountainous areas will be felled by 2020.

In forestry, potential is found in developing and increasing the use of forest biomass. As noted, the supply of wood fuels for energy production has already doubled between 1990 (less than 800 000 MWh) and 2008 (1,6 TWh).

The success depends largely on the demand from municipally-owned district heating facilities. The district heating system in Östersund is fed with forest residue provided by a large co-operative which has both created a stable demand for forest biomass and enabled diversification of the forest industry (Jämtland County Administrative Board 2009b; OECD 2011a; OECD 2011b; OECD 2011c).

The potential amount of branches and tops that could be cropped for energy purposes in Jämtland is 400 000 tons of substance per year which corresponds to 2 TWh. Now approximately 55 000 tons are cropped yearly. Based on interviews and regional strategies, the development of the transport infrastructure is essential if the aim is to increase the export of bioenergy wood from the county and better fulfil the potential.

Further, increasing the share of crops creates new needs for environmental consideration and it must take place in a sustainable and responsible way that takes into consideration the entire ecosystem and long-term productivity. Increasing use of forest biomass for renewable energy may have a negative effect on sustainability of the forest sector. Increased biomass production can be expected to lead to parts of the forest land being used more intensively with tree species with shorter circulation periods (Jämtland County Administrative Board 2012a; The Swedish Environmental Protection Agency 2013a; Interviews).

In forest industry there is also potential for diversification of the rural economy via tourism. It is noted in the Rural Development Programme that cooperation forms that could improve the preconditions that small enterprises have for developing new products and activities should be found in order to encourage diversification (Jämtland County Administrative Board 2012a).

Transport

Greening the transport sector is particularly challenging in Jämtland because of the long distances and sparse population of the county and its peripheral location. All of the selected sectors in this case study are highly dependent on functioning transport and infrastructure. Greening of the transport sector is essential in order to improve the sustainability of the other sectors as well. The county is still largely dependent on road traffic and the transport sector stands for half of all the GHG emissions in Jämtland with only a slow decrease in emissions since 1990 (Swedish Environmental Protection Agency 2013a).

Information on whether Jämtland is close to the EU policy target of 10% of energy used in the transport sector being from renewable sources has not been found but in 2009 the County Administrative Board noted that the transport sector was still very dependent on fossil fuels. From interviews and other information it can be gathered that progress has taken place since 2009 as for example the share of green cars of all new cars has been increasing.

According to the interviews, the development related to accessibility by railways to the county has not been positive and there is a risk that the county would become even more dependent on road and air traffic. Developing the railroad connections is essential for the greening of the sectors but requires national level efforts.

On the other hand, also the quality of roads should be improved in order to secure accessibility and the development of bioeconomy. It has been noted that for example many forest roads at the moment are not suitable for wood transportation other than on wintertime. Developing the railway connections but also the quality of roads are essential for utilising the potential for green economy.

Even though there has, according to the follow up of the environmental objectives, been a vast positive development going on in Jämtland with efforts related to infrastructure, sustainable planning and sustainable transport, the efforts have still been in small scale and the pace of the development has been estimated to be too slow.

Still however it should be noted that especially the municipality of Östersund developing the infrastructure for green cars and as well as the County Administrative Board allocating funding for projects concerning fossil fuel free Jämtland can have a positive influence on the development and seem to have a clear development ambition in the issue (Jämtland County Administrative Board 2012a; Jämtland County Administrative Board 2012c; Swedish Environmental Protection Agency 2013a; Interviews).

Tourism

The performance and potential concerning greening the tourism sector is particularly challenging to measure in a quantitative manner. In general, tourism is very important for Jämtland. In no other county in Sweden is tourism sector as important for the regional economy as in Jämtland. Taking the point of departure from regional strategies and the interviews with stakeholders, it can be noted

that developing sustainability of the tourism sector has already been relatively well mainstreamed in Jämtland and there are continuous efforts going on.

What is written on the performance of the transport sector and greening of the sector is however highly relevant for tourism. It is stressed by the regional stakeholders and emphasised in regional strategies that the tourism sector in the county cannot be considered sustainable unless it is possible to travel to the county with public transportation and on railway.

The regional strategies consider sustainable tourism to have a big potential in Jämtland and also having potential for contributing to diversifying the business activities of agriculture and forest entrepreneurs. The low density and peripheral location are some of the main challenges related to fulfilling all the potential of the tourism sector in Jämtland. The need for functioning transport connection also links the development of the tourism sector to the transport sector and accessibility.

Several actors such as the tourism association Jämtland-Härjedalen Turism as well as the Mid Sweden University play important roles in developing sustainable tourism. In their projects they facilitate fulfilling the potential of the sector by providing knowledge and developing the sustainability in tourism in Jämtland.

The tourism sector is highly dependent on the nature and the untouched landscape of Jämtland but studies have already shown a conflict between the wish to maintain the untouched landscape and on the other hand the wish to develop the accessibility of the untouched areas and tourism. In order to increase the importance of tourism sector in Jämtland, it is important to be able to find a balance between developing tourism while protection and developing the environment and providing also preconditions for reindeer husbandry (Swedish Environmental Protection Agency 2013a; Jämtland County Administrative Board 2007).

8.2 Potential for GVA increase and job creation

Information on GVA per GREECO sectors according to the NACE Rev. 2 (two digit level) classification has not been available at county level in Sweden. It has only been possible to study employment on the sectors and share of employees in each sector of all work force and therefore it is not possible to provide reliable estimations on the potential for GVA increase either. In this chapter, mainly the employment in the sectors and the challenges related to demography and structural changes in relation to availability of competent labour force are discussed.

In **agriculture**, the average age of farmers is high and in a few years, one fourth of the farmers will retire. At the same time a structural change is expected to take place as meat production is expected to increase and milk production to decrease. Both parts of the development are expected to have an effect on the landscape and biodiversity if they for example result on large overgrown areas.

Also a lack of qualified labour force is expected to take place when large shares of the aging work force leave the labour market. However in a barometer from 2011, the farmers and especially milk producers in Jämtland had positive attitudes towards the future and respond to the decreased profitability with increased efficiency and productivity. Many farmers also invest in diversifying

their business with e.g. small-scale tourism which can be expected to have an effect on the economic performance of many farmers.

The primary sector is still important employer in Jämtland, also in comparison to other Swedish regions. Agriculture employs approximately 3% of all labour force. As the potential for increasing the production of energy crops or energy gas from agriculture is considered relatively limited and should be further investigated, it can probably be said that the energy production from agriculture cannot be expected to create many new jobs.

Forestry is also still an important employer in Jämtland employing approximately 5% of all labour force. Especially producing forest biomass for bioenergy has increased extensively and for example forest residue is successfully used for district heating.

According to estimations from 2011, diversifying the local forest industry by biomass production has already created more than 250 jobs specialised in biomass management and transportation. The regional stakeholders consider there to still be possibilities to further increase the use of forest biomass. For example only 55 000 tons of branches and tops that could be used for energy purposes are cut yearly while the potential amount lies at 400 000 tons.

It is difficult to estimate the effects on increased biomass production from forests could have for job creation but it is reasonable to conclude that if all the plans for investigating and increasing the use of forest biomass are implemented, it would have an effect in job creation. However the sector already suffers from low knowledge level amongst forest owners and employees and difficulties in recruiting competent labour force which could also influence the greening of the sector and the possibilities to increase the uptake of forest biomass.

In **transport**, greening the sector is mainly related to improving accessibility by railroad as well as improving the infrastructure for green cars and improving the quality of roads. In the regional strategies partly also possibilities to increase accessibility without need to travel is investigated. It is hard to come to any conclusion on what the development would have as consequences for job creation.

The share of work force employed in **tourism-related trades** has been increasing in Jämtland in a relatively stable manner. Economically the sector is doing well. The turnover of the sector increased with 130 million SEK between 2011 and 2012 even though the winter season was shorter than usually (Jämtland-Härjedalen tourism 2012).

Based on the economic development of the sector, it can be expected that the share of employees will continue to increase. In strategies it is also identified that there is potential in creating more small-scale tourist destinations in relation to agricultural and forest sector which could also promote job creation to smaller extent (e.g. County Administrative Board 2012a).

8.3 Interaction between external and internal drivers in view of realizing the regional potential

Especially the sectors of forestry, agriculture and tourism are highly dependent on the natural resources of Jämtland and the role of natural resources as external factors play an important role in realising the regional potential within the sectors.

In order to develop those sectors, it is essential to take the environmental aspects into consideration and exploit the natural resources in a sustainable manner. This has already been recognised by most actors and it is an important focus area in strategies and programmes at all levels even though at municipal level the economic arguments may still win over environmental ones.

8.4 Conclusions

There is a clear regional ambition in Jämtland related to greening the economy and improving the sustainability. Funding from both national and EU level has been essential for implementing various kinds of projects within the sectors. The development is going in the right direction in all sectors even though sustainability has been more integrated in some sectors than in others.

In agriculture especially the EU policies and support have had an impact on greening the sector as well as the good preconditions that Jämtland has for organic production. The county has reached the national goals for the share of organically cultivated land and the share of eco-certified products is increasing. At the moment the main challenge in developing the sector further is related to the market demand for organic products that is not increasing at sufficient rate. Also the structural change and aging of farmers and lack of qualified labour force are challenges that the sector needs to respond to and that can also have an effect on greening the sector.

While the share of organic agriculture has reached the policy targets, the share of protected productive forest land has increased only slowly. It has been challenging to increase the environmental competences of forest owners and employees which has also had an effect on the level of environmental consideration in the sector. Biomass production for bioenergy use has already become an important part of the forest sector but there is still considered to be unused potential. However both qualified labour force and better transport solutions would be needed.

Greening the transport sector is essential for all of the other sectors. Positive development has been taking place especially via public initiatives but the progress has still been considered too slow. In tourism, the development has also been positive and there is potential for diversifying the rural economy with small-scale rural tourism.

9 The Road ahead and conclusions

9.1 Classification of the region according to GRECO regional typologies

According to typology, the region is classified as a predominantly rural mountainous, border region in industrial transition.

9.2 Road ahead and policy needs as seen by local stakeholders

The regional and local stakeholders believe that environmental sustainability will be prioritised in Jämtland also in the future. It is believed to be an important part of the municipality brand especially in the municipality of Östersund and also in the main tourist municipality of Åre. The image of untouched nature is important for Jämtland and it is considered important to exploit the natural resources in a responsible way.

However it is still noted that at local level, economic arguments are considered in some cases more valuable than the environmental issues. Many of the rural municipalities are suffering from aging and decreasing population and are constantly under economic pressure. Because of the municipal strong self-governance, the decision-making chain from EU level to local level is easily broken if the municipality considers that it has to prioritise its economy in the decision-making. In order to facilitate greening the economy, it would be important to be able to better anchor policy at local level and to increase the awareness of local policy-makers and decision-makers on green investments and their potential.

The stakeholders in different sectors stress the need for more long-term approach or vision in policy making from both national and EU level in order to facilitate developing green economy at local level. The lack of long-term approach causes that municipalities and for example individual farmers or other entrepreneurs are not able to do green investment decisions as it may be unclear what kind of policy will be applied in the future concerning for example requirements for support.

In relation to the development of agriculture, it was also underlined by the stakeholders that it would be beneficial to develop the EU agricultural policy so that it takes into account the specific preconditions in Sweden in order to promote development towards green economy. Current regulations concerning pasturelands may steer the development to opposite direction in case farmers fell trees in the traditional pastures because of the regulations for support.

The need for national level support for developing the green economy in the county was also stressed together with the need for clearer, stronger and more coordinated state level efforts concerning different aspects of green economy. Among other things it is noted that the national efforts on biodiversity should be stronger and there is a need to make the national level requirements concerning biodiversity more binding.

National level efforts would also be needed in order to ensure possibilities to travel to Jämtland in a sustainable manner as well as to find solutions to other

challenges related to the peripheral location of the county such as transportation of forest biomass for bioenergy.

Especially the need for functioning railway connections has been stressed by both the interviewed regional and local stakeholder and in the regional strategies. It is essential to be able to travel to Jämtland in a sustainable manner on railway so that the county does not become solely dependent on road or air traffic.

The stakeholders also note that taxation could be developed to better promote sustainable development. The tax system could be used to steer the development towards increased share of renewable energy and increased sustainability in several sectors.

9.3 Road ahead and policy needs as seen by GREECO

The main challenges in greening the economy in Jämtland are related to the geographic location of the county (long distances within as well as to and from the county), the demographic development and the need for more stable long-term policies in order to encourage green investments at regional and local level. Also the need to ensure the anchoring of green policy goals at local level has in times been challenging.

The peripheral geographic location of the county combined with the sparse population and spread out settlement structure is a challenge that has a strong influence in greening the economy. Therefore efforts for greening the transport sector are of special importance as they also influence the potential for improving the performance of other sectors in terms of greening the economy.

Related to the demographic challenges, approximately 24% of the active work force is expected to leave the labour market between 2008 and 2018 in Jämtland which will influence the way in which the economy can be developed also in terms of greening. The demographic development and competence supply is taken into consideration in regional strategies but strong efforts are needed in order to increase the availability of competent qualified labour force.

The uncertainty on future regulations and policy guidelines influences decision making at municipal level but also affects individual entrepreneurs and consumers. In the Swedish governance system, the municipal level and the central level are strong while the regional level is relatively weak. Also the municipal level however is of course dependent on national and EU level policy. Therefore in order to promote greening the economy at local and regional level, it would be important to aim at creating stable and long-term policies at national and EU level. Awareness-raising on the potentials for green economy at local level among policy-makers and decision-makers would help to ensure that the policy goals set at EU and national level are implemented at local level.

A lack of sufficient level of monitoring or analysis in a coordinated form in the selected sectors can influence the development and as also noted by the Swedish Environmental Protection Agency, there is a need for more detailed policy targets at regional level which would make it easier to see the progress and evaluate the distance to policy targets. Improved analysis and follow-up system would allow policy to better respond to the policy needs and trends in Jämtland.

9.4 Main policy recommendations

Based on interviews with regional and local stakeholders as well as on desk research, the following recommendations can be presented in order to meet the regional and local policy needs for developing green economy. The recommendations are divided according to the governance level they mainly address but they also require cooperation between the policy levels and several of them concern various levels.

EU level

- More stringent EU policy could facilitate greening the economy at local level as at the moment local policy-makers may consider some EU policies mainly as guidelines that are optional to follow.
- More long-term vision and approach in EU policy would facilitate decision making at local level as well as green investments of both public authorities, entrepreneurs and citizens. More stable policy could encourage to develop green economy as it would provide a greater certainty to the decision makers on future development in policy and support. More stable policy would also facilitate continuation in working towards green economy.

National level

- The tax system could be developed to better steer towards greening the economy.
- National level efforts are needed to develop sustainable transport in and to Jämtland. The sustainability of the transport system and accessibility are essential for greening the bioeconomy and tourism in Jämtland.

Regional and local level

- It is important to take into consideration in policy making the demographic challenges related especially to the aging population. When greening the economy is discussed in policy, it is beneficial to include the effects that the demographic development has on labour and competence supply and how it relates to the opportunities for greening the economy. It has already been noted for example that the retiring farmers and thereby the decreasing amount of farmers change the agricultural landscape in Jämtland.
- Developing the analysis and monitoring system concerning the green economy would be beneficial in order to be able to provide information in a collected form on the development of green economy in Jämtland in different sectors. A well-developed and coordinated monitoring system would facilitate targeting the policy efforts in the most efficient manner as well as make it possible to raise awareness of the current development amongst the general public and public authorities.

Local level

- Awareness of local policy- and decision-makers concerning greening the economy and the opportunities it can provide for the municipal economy as a whole needs to be improved in order to facilitate local

level anchoring and implementation the EU and national level goals concerning green economy.

- The municipalities could develop their work towards greening the economy by setting clearer goals and especially by developing green public procurement and thereby setting an example and providing the framework for greening the economy locally.

9.5 Transferability

A regional ambition for greening the economy can be found in Jämtland. Sustainability and energy issues are discussed in connection to different sectors which can also be noted in regional development strategies and sectoral programmes. The regional policy documents concerning regional development and specific sectors can be considered good in the sense they are based on identification of the strengths and weaknesses of the region. They can also provide information on e.g. what the changes in energy provision can have as consequences for different stakeholders. Even though more quantitative targets could be offered in order to better follow up the progress, the regional strategies do take greening the economy into consideration in a variety of ways.

When transferability is concerned, it is important to take into consideration the Swedish governance system with relatively weak regional level and strong national and local level. The structure influences strongly the room for manoeuvre of different actors and in Sweden the municipal self-governance makes the efforts and ambition for greening the economy relatively dependent on the political will at municipal level.

The work at the municipality of Östersund for improved environmental sustainability has been successful and it has been setting local environmental targets that are higher than the nationally required ones. Especially in relation to transport infrastructure and developing green transport, the municipal has been successful. By providing the needed infrastructure for green cars and by setting an example, it has encouraged consumers and other actors to invest in green vehicles.

The municipality has also integrated sustainability as part of its "brand" and through its environmental management system integrated the sustainability work to all sectors. At the moment (Spring 2013), it was also in the process of developing an innovative climate fund where local funding would be allocated for projects.

The Swedish environmental objective system can also be considered a good example and similar practices could be implemented also in other countries. The system has ambitious aims at setting national and regional goals and also following up the progress systematically. It is clear that the system needs to be developed further and at the moment the goals and the follow up indicators are being revised. However even though the system has its limitations, it can provide an overview of the situation concerning the most important environmental goals also concerning different sectors.

Also the Swedish environmental management system (miljöledningssystem) can be considered a good example on how to mainstream sustainability issues. All

state actors have to develop an environmental management system where they divide responsibilities for activities for improved environment, set priorities as well as follow up and control the efforts. The work at the state municipalities (including the county administrative boards) is monitored by the Swedish Environmental Protection Agency whom the state actors also yearly report to.

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11 Appendices

1. Main relevant regional and national policies

Type of policy	Short description
National strategies	<p>The Rural Development Programme for Sweden 2007-2013</p> <p>Under axis 1, the measures aim at improving the competitiveness of the agricultural and forestry sector, reindeer husbandry and food production and processing, all based on sustainable use of natural resources. Approximately 15 per cent of the programme's total budget will be allocated to measures within axis 1.</p> <p>Under axis 2, the measures "are designed to preserve and improve an attractive landscape and living countryside, and stimulate the shift to efficient and sustainable production with lower environmental impact, in order to help achieve EU and Swedish environmental objectives as effectively as possible. An integrated approach is to be developed in which the landscape is seen as a resource for recreation, development and growth, as a place to live and as a site of natural and cultural heritage."</p> <p>In the budget, the environmental measures dominate. At least 73% of the funding should be allocated to axis 2. In budgetary terms, "Environmentally friendly farming" is the biggest individual measure under the axis. Grants will also be paid to the forestry sector for selective measures within a framework of active maintenance measures to underpin biological diversity and protect the cultural heritage of the forest.</p> <p>Measures under axis 3 aims to promote greater diversification of the rural economy with the objectives of promoting employment and a better quality of life for those living there, as well as sustainable use of the combined resources of the countryside. 12% of the funding will be allocated to axis 3.</p> <p>Axis 4 aims at effective implementation of the programme through local support, participation and cooperation and includes the Leader method. 7% of the total budget should be used to implement the Leader method.</p> <p>In addition to supporting agriculture and forestry, the rural development programme also allocates funding to projects related to developing new services related to agriculture and forestry as well as for projects related to attractive living environments which can be used to develop tourism services in rural areas.</p> <p>Sweden's Environmental Objectives</p> <p>Sweden's Environmental Objectives include a "generational goal" to by 2020 hand over "a society in which the major environmental problems facing the country have been solved". It also includes 16 more specific quality objectives adopted by the Swedish parliament.</p> <p>Goals related to agriculture are included in the strategy and measures to reach the objectives are presented. In particular the goals of "varied</p>

	<p>agricultural landscape”, “non-toxic environment” and “zero eutrophication” as well as “rich diversity of plant and animal life” are relevant to agriculture. It has also been analysed whether the goals can be nationally reached by 2020 with the current and planned policy by 2020. None of the goals related to the above mentioned themes can be reached by 2020.</p> <p>Several of the objectives are relevant to forestry but also a specific goal on sustainable forests is included stating that the value of forests and forest land for biological production must be protected while at the same time safeguarding the biological diversity and cultural heritage and recreational assets. According to analysis, the goals related to the objectives cannot be reached with the planned policy measures by 2020.</p> <p>Many of the objectives are related to transport and the Swedish Transport Agency has also drafted an action plan for measures related to the environmental objectives where all the Swedish environmental objectives and the related measures in the transport sector are included.</p> <p>Transport sector contributes to reaching the overall goal of reduced climate impact by aiming at becoming fossil fuel free by 2030 and by increasing its energy efficiency. It is noted that the development of the sector is also essential in reaching the other objectives. In addition to the goal of reduced climate impacts, based on analysis of the sector the objectives of “clean air”, “natural acidification only”, “zero eutrophication”, “good built environment” and “rich diversity of plant and animal life” are prioritised in the environmental work concerning the transport sector.</p> <p>Tourism is mentioned in connection to the goal of balanced marine environment, flourishing coastal areas and archipelagos where concentrations of large-scale tourism are seen as a challenge for conservation of cultural heritage.</p> <p>Under the objective of magnificent mountain landscape, the possible conflicts between reindeer husbandry, tourism, wind power and mineral extraction are considered challenges. Therefore it is stated that it is essential to work together in order to develop and use the sensitive environments in a sustainable manner.</p> <p>Sweden – The New Food Nation</p> <p>The Swedish Government has produced a vision related to world class food, living countryside and tourism. It includes an action plan combining efforts for public food served in schools and elderly homes, profitable and increasing primary production, increasing amount of foodstuff enterprises as well as food tourism. The goal is to create 10 000 new jobs in all Sweden.</p> <p>Strategy for sustainable forest production</p> <p>According to the Swedish Government, the Swedish policy on forestry builds on the principles of equal objectives of productivity and environmental sustainability. According to the production goal, forest should be utilised in a responsible and efficient way so that they can produce good returns. According to the environment goal, the biodiversity and genetic variation in forest shall be protected.</p> <p>The Strategy for sustainable forest production sets out general guidelines concerning sustainable forestry and issues such as forest regeneration and choose of plant and tree species based on climate change adaptation.</p> <p>Government bill on future travel and transports (prop. 2008/09:93) and Government bill on future travel and transports – infrastructure and sustainable growth (prop. 2008/09:35)</p>
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	<p>The overall goal of the national level transport policy in Sweden is to ensure socio-economically efficient and environmentally sustainable transport for inhabitants and businesses in all Sweden. It also has specific goals for functionality and accessibility as well as for safety, health and environment.</p> <p>National plan for the Swedish transport system 2010-2021</p> <p>The plan sets out the principles and economic framework for the development of the transport sector in Sweden. Issues related to environmental sustainability are included in the plan.</p> <p>Tourism Industry's National Strategy 2020</p> <p>The overall aim of the strategy is to reach stable and sustainable growth, increased national and international competitiveness and increased share of the market for the Swedish tourism industry at the same time as important natural and cultural values are protected.</p> <p>The strategy has three focus areas: Tourist destination development, offensive marketing and selling and coordinated tourism industry. The point of departure of the strategy is that local actors have the best knowledge of what is needed to develop the industry in their region and the aim is to among other things to inspire local actors to cooperate in order to increase the attractiveness of their region. Issues of sustainable growth and protection of cultural and natural values are also present in the strategy.</p>
<i>Regional strategies</i>	<p>Implementation strategy for the rural development programme in Jämtland 2007-2013 (Genomförandestrategi för Landsbygdsprogrammet 2007-2013 i Jämtlands län)</p> <p>Jämtland has chosen five focus areas in its regional implementation for the Rural Development Programme. In the region, the activities within the programme focus on: 1. Promoting sustainable development and utilising natural resources in a sustainable manner, 2. Develop the production of foodstuff with, 3. New product and service production related to agriculture and forestry, 4. Knowledge, innovation and entrepreneurship, 5. Attractive living environments</p> <p>Regional Development Strategy</p> <p>The strategy stresses the principle of economic, social and environmental sustainability. It states that growth in the region should take place in an economically, socially and environmentally sustainable manner. The strategy addresses mainly living environment and regional attractiveness, business and entrepreneurship, infrastructure and accessibility, competence and knowledge and energy and climate.</p> <p>Active agriculture is mentioned as a precondition for the open landscape and the cultural environments that attract tourists and inhabitants. The small-scale foodstuff production in the region is also mentioned as a factor with a positive influence on the development of the region. It is stated that work related to environment should be included in all sectors.</p> <p>Specific objectives related to forestry as such are not included but infrastructure and accessibility is one of the priority areas of the strategy that shall be developed in order to respond to the challenges brought about by the long distances within the region and the long distances from the region to</p>

	<p>bigger markets.</p> <p>Train connections, flight connections, bus traffic, footpaths and cycle paths, road condition and the conditions for goods transportation will be improved.</p> <p>The provision of public transportation opportunities will increase and the use of passenger cars will decrease. Furthermore, all the buses in the region should be fossil fuel free by 2020.</p> <p>Tourism is strongly present in the strategy as one of the strengths of the region. Within the focus area of business and entrepreneurship, tourism industry has an important role and the goal is that by 2020 the investments in experience-based tourism has resulted in that the county has become one of the most important tourism counties in Sweden with strong year round tourism.</p> <p>It is also stated that investments in improving the transport connection shall be done in situations where they can contribute to improving the preconditions for tourism and other businesses.</p> <p>The strategy identifies the development of intensive tourism industry to be in some cases in conflict with protection of natural and cultural values and the tourism sector dependent on flight connections in conflict with the environmental goal of reduced climate impact.</p> <p>Regional environmental objectives</p> <p>Following the national level strategy of Sweden's environmental objectives, Jämtland has produced a strategy for working towards the objectives in the region. It is stated that Jämtland shall have an open and diverse cultivation landscape based on active and sustainable agriculture.</p> <p>Jämtland has also included own goals and measures that are not included in the national environmental objectives. Related to agriculture, Jämtland aims at increasing the awareness of farmers and consumers on resource management and circulation and sets also its own goals related to developing the foodstuff production in the region and increasing the share of products with eco-certification to 20%. The objectives also include several other targets that are not included in the national goals.</p> <p>Of the nationally defined goals that are particularly relevant to agriculture ("varied agricultural landscape", "non-toxic environment" and "zero eutrophication" as well as "rich diversity of plant and animal life") Jämtland is close to reaching the goal related to zero eutrophication but cannot reach the other goals with current policy and measures.</p> <p>Related to forestry, in addition to the national targets Jämtland has set local targets for different types of forests. In the analysis, it is stated that with the current policy measures, the objectives related to sustainable forest cannot be reached by 2020 in Jämtland.</p> <p>Taking environmental issues into consideration should be further developed in forestry and more conservation measures will be needed. In order to reach the goals, the Jämtland County Administrative Board has together with the Swedish Forestry Agency also produced a specific Regional Strategy for formal protection of forests in Jämtland.</p> <p>Transport is included in relation to several goals such as the objective of</p>
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	<p>reduced climate impacts. Among other things the importance of developing economically and environmentally sustainable transport system for biofuels from farming and forestry is underlined.</p> <p>The tourism sector is mentioned in connection to several goals but is in Jämtland particularly relevant to the goal of magnificent mountain landscape and rich diversity of plant and animal life which are also some of the priority environmental objectives of the region.</p> <p>Energy and climate strategy for Jämtland 2009-2020</p> <p>Jämtland aims at becoming fossil free by 2030 and the strategy concentrating on energy supply, renewable energy, energy efficiency, efficiency in the transport sector and physical planning guides the strategic work towards the objective.</p> <p>The strategy also lists what the expected changes imply for inhabitants, enterprises, local and regional authorities and the nature and natural resources of the region as well as notes what sort of efforts are needed from national level actors. The potential of agriculture in producing biofuel to a smaller extent and especially biogas is stressed. They are also seen as a way for farmers to diversify their business.</p> <p>Related to agriculture, the strategy further notes that efficient use of natural resources is an important part of energy efficiency and that in order to decrease GHG emissions, also consumption of foodstuff and other products has an important role.</p> <p>The strategy emphasises the important role that the vast forest resources have to the region and states that the resources shall be used on one hand to produce timber and on the other hand to produce renewable energy. At the same time forests and for example the biological diversity shall be protected.</p> <p>Therefore it is stressed that it is important to use the forest resources and raw material as efficiently as possible and utilise the resources for right purposes.</p> <p>The strategy stresses the importance of transport for the inhabitants and for the business life and considers it essential to improve its energy efficiency. Public transport for inhabitants and railway transport as a more energy efficient way for goods transport than road traffic will be developed. In addition it is noted that not travelling is the most efficient way to make travelling more efficient and therefore distance services should be developed.</p> <p>In transport sector, the focus areas are more efficient goods transport (on railway instead of road transports), improved public transport as well as improved accessibility of services without need to travel (distance services, meetings and education). Also transition to renewable fuels in transports is outlined in the strategy.</p> <p>The strategy stresses the role of tourism as an important strength of the region and states that the climate change can bring about both challenges and new possibilities for the sector.</p> <p>It is stated that energy efficiency in the tourism sector must be improved and as the tourism sector is dependent on transport connections, the role of sustainable transport sector in connection to the development of the tourism industry is stressed.</p>
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	<p>It is further noted that in addition to sustainable transport, also the activities in the tourist destinations must be sustainable and the energy efficiency of buildings must be improved.</p> <p>In the strategy it is stated that as there is considerable research on tourism in the region, it could be utilised to develop new types of tourism among other things in order to meet the challenges that can come up if the climate changes shortens the winter season that has been the most significant tourism season for Jämtland. Tourism is chosen as one of the focus areas in research.</p> <p>Strategy for the development of sustainable nature-based and cultural tourism in Jämtland [Strategi för utveckling av hållbar natur- och kulturturism i Jämtlands län]</p> <p>The strategy identifies the strengths and weaknesses of the region in developing sustainable tourism and states that the county has good preconditions for developing sustainable nature-based and cultural tourism both for summer and winter season.</p> <p>In addition to identifying the opportunities, the strategy describes the development and protection work, states that the preconditions of each place must be respected in the development work and emphasises the local anchoring of tourism development. Also accessibility is discussed.</p> <p>Furthermore, the strategy discusses developing a system for avoiding conflicts of interest.</p>
<p>Regional development programmes</p>	<p>Regional Growth Programme</p> <p>The programme is a steering document for reaching the goals related to sustainable growth and is a document with more short term approach aiming mainly at increasing employment in the region.</p> <p>Particularly related to agriculture are e.g. the targets of increasing the degree of processing in enterprises in Jämtland and of increasing the sale of enterprises both within the region and outside the region.</p> <p>The programme does not in general mention specific sectors much but related to forestry are e.g. the targets of increasing the degree of processing in enterprises in Jämtland and of increasing the sale of enterprises both within the region and outside the region.</p> <p>Related to the transport sector, increasing accessibility in the region across long distances is one of the focus areas and increased use of public transport is a goal.</p> <p>Developing tourism industry is present in many parts of the programme and under the priority area of innovation the tourism-related goals are increased the amount of foreign visitors in the region (an increase at least 10% more than in other comparable regions) and improved year-round tourism.</p> <p>Under the priority area of competence provision, infrastructure for strategic investments in tourism in order to increase the attractiveness of the region is mentioned. In the priority area of accessibility, the goal is to improve the connections to the tourist destinations for both Swedish and foreign visitors.</p>

	<p>Fossil fuel free 2030 – action plan for climate work in Jämtland</p> <p>The action plan outlines climate work in Jämtland. The focus areas are:</p> <ul style="list-style-type: none"> • renewable fuels • public transportation • improved railway connections • more efficient goods transportation • renewable fuels from forestry and agriculture • biogas from agriculture, waste and sewage • combined heat and power from biofuels • hydropower • wind energy • energy efficiency • sustainable settlement structure • sustainable building • accessibility without need to travel • energy and climate advisory • conscious consumption • sun energy • tourism <p>The planned activities predominantly focus on increasing awareness, cooperation and dialogue concerning the focus areas as well as on conduction analysis in order to identify potentials and utilise them.</p> <p>Regional traffic provision programme 2013-2015</p> <p>The programme builds on the national goals of Swedish transport policy and describes the state of public transportation in the region and how it can contribute to the overall development of the region. It sets goals in the sector concerning economically, socially and environmentally sustainable development.</p> <p>The goal related to economically sustainable development is to provide good transport connection in order to promote commuting. In connection to social sustainability, the aim is to provide transport possibilities that offer freedom of choice and are safety and accessibility. In environmentally sustainable development, traffic will have a limited effect on the environment.</p>
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2. Interview protocol templates

Sweden, Jämtland	
Institution	Åre municipality
Date	27.02.2013
Present at meeting	Benckt Aspman, Liisa Perjo
Main points discussed: <ul style="list-style-type: none"> - The municipality starting to work with sustainability issues more systematically in early 1990s' in connection to Agenda 21 - The chain in policy making from EU level to local level and the related challenges if the political will at municipal level is lacking - Tourism as one of the absolute key sectors in green economy in Åre and tourism projects related to sustainability. The municipality has in cooperation with the tourist destination Åre developed an energy strategy for the destination. - The link between functioning transport system and green tourism, in order to develop sustainable tourism, it must be possible to travel to the destinations with public transport - The role of economic issues as still the most important issues considered in municipal decision making - The issue of common limited understanding of opportunities that green investments can provide in terms of future savings - The central role of EU projects (especially INTERREG) in local development work but challenges related to bureaucracy and requirements for own funding - Establishing a national park in the area a current question at the moment, challenges related to combining different interests - EU funding has been important but the required bureaucracy and own funding can be too demanding for a small municipality - Environmental goals at national and EU level relatively low, requirements should be more binding and higher 	
Conclusions: <ul style="list-style-type: none"> - Municipal self-government in Sweden can challenge the implementation and adaptation of EU policy at local level, the existence of political will is essential - Economic issues in many cases prevent development of green economy and the understanding of economic possibilities related to green growth is often not sufficient - Challenges in agreeing on common goals and needed activities between actors at different administrative levels 	

Sweden, Jämtland	
Institution	TORSTA AB (Development enterprise owned by the regional council and the representatives of enterprises in agriculture and forestry)
Date	27.02.2013

Present at meeting	Håkan Schürberg, Liisa Perjo
Main points discussed: <ul style="list-style-type: none"> - Laws and regulations related to biodiversity and forestry and the need for stronger national level grip on biodiversity issues - The central role of change in legislation in 1990 for the development of sustainable forestry - The role of certification systems and the need for stricter requirements - The need for national level efforts in order to develop bioenergy solutions for regions where there is a lot of potential - Torsta AB working successfully with informing forest owners on alternative options in forestry in order to for example increase diversifying in forestry - EU policies are not that central in guiding forestry and more important for agriculture 	
Conclusions: <ul style="list-style-type: none"> - More activity and stricter guidance from national level needed both in biodiversity issues and in order to develop solutions for bioenergy from forests - The certification systems need to be further developed and the rules should be made stricter - EU policies are less important for forestry 	

Sweden, Jämtland	
Institution	Östersund municipality
Date	04.03.2013
Present at meeting	Örjan Wiklund, Liisa Perjo
Main points discussed: <ul style="list-style-type: none"> - At the moment, the municipality is working on new development programmes, sustainability and green issues are expected to have an important role - Environmental goals will also be taken into consideration in spatial planning - EU projects are very important, especially LEADER - The municipality is also updating the rules for public procurement - Wind energy growing a lot and Östersund is pioneering in biogas and electric cars. 	
Conclusions: <ul style="list-style-type: none"> - The interviewee does not work himself with related issues and have limited possibility to comment - As all the most central plans are at the moment being revised, the interviewee had difficulties in answering the interview questions 	

Sweden, Jämtland	
Institution	The Federation of Swedish Farmers
Date	06.03.2013
Present at meeting	Erik Gudmundson, Liisa Perjo
Main points discussed: <ul style="list-style-type: none"> - The essential role of both EU financial support and market demand when it comes to ecological food production and agriculture - The central role of LEADER and work at local level. LEADER projects with themes such as more resource efficient production. - The role of public procurement often in favour of low prices and the public procurement rules can function as an obstacle for the development of sustainable food production - The lack of market demand for ecologic products is a hinder for the development - EU regulations as general and not in all cases applicable for the Swedish conditions (for example pasture land and trees) and can thereby function as obstacles for more sustainable forestry and encourage for not sustainable agriculture - Contradictions in defining what is the most sustainable solution, for example in a situation where young forest extensively bind carbon dioxide but older forests can be better in other senses (biodiversity, recreation) 	
Conclusions: <ul style="list-style-type: none"> - The role of market demand is important and intertwined with policy and support - It is essential to work with green issues at local level to achieve local support and promote sustainability, LEADER is an important tool - EU regulations are not always suitable for Swedish conditions 	

Sweden, Jämtland	
Institution	Östersund municipality
Date	06.03.2013
Present at meeting	Jari Hiltula, Liisa Perjo
Main points discussed: <ul style="list-style-type: none"> - The municipal development work in relation to green economy, sustainability included in general growth strategies as well - Tourism sector as the clearly most important sector for green economy in the municipality - The role of EU goals and the municipal ambition to set goals that go further than the EU goals - The importance of developing innovative public procurement further. In developing biogas the municipality has already shown how developing public procurement and building the infrastructure has encourage citizens to invest in green cars. - The chain in development work from EU to national, regional and municipal level and 	

<p>the challenges related</p> <ul style="list-style-type: none"> - The role of funding from different levels, the importance of national level local development programme funding and the initiative to start a local green investment fund - The municipality developing an own climate investment fund to allocate funding for green ideas - Consumption as a hinder for the development of green economy and the lack of will to make “uncomfortable” political decisions that would clearly steer consumption (e.g. in relation to spatial planning)
<p>Conclusions:</p> <ul style="list-style-type: none"> - For the development of green economy, politics can have an important role - Important that the municipality can have clear goals and set an example - Funding from both national and EU level have been important

Sweden, Jämtland	
Institution	Jämtland-Härjedalen Turism
Date	07.03.2013
Present at meeting	Ingrid Hedlund, Liisa Perjo
<p>Main points discussed:</p> <ul style="list-style-type: none"> - Development of sustainable tourism in Jämtland has been a focus area for a longer time - The regional policy for sustainable tourism in Jämtland as a central policy tool was developed 4-5 years ago based on the general regional development strategy - Also tourist destination enterprises have developed their own sustainability policies that respond to the regional policy - The overarching nature of sustainability work and awareness in Jämtland and its influence - The need for more national level support for entrepreneurs so that they can reach the environmental goals set at national level - The need for increased national efforts - The central role of EU funding - Conflicts between wind power and tourism - Networking and cooperation with the regional council and the destination enterprises and other actors has been important for the development, strong network 	
<p>Conclusions:</p> <ul style="list-style-type: none"> - Sustainable tourism develops increasingly in Jämtland - Cooperation between different actors as an important factor influencing the development - Funding from both EU and national level essential but in practical development work the role of the regional policy for sustainable tourism is considered more important 	

Sweden, Jämtland	
Institution	Östersund kommun
Date	13.03.2013
Present at meeting	Anne Sörenson, Liisa Perjo
Main points discussed: <ul style="list-style-type: none"> - The development of environmental related work in the municipality and the work related to sustainable transport sector - The central role of especially national funding in facilitating developing sustainable transport in the municipality, the initiatives stemmed from the municipality but the available funding was essential as facilitator - After years of project based work with especially national level funding, the municipality also decided to set two permanent vacancies for green transport to continue the work, the earlier national level funding important also in building up for that - As resources are limited, cooperation with and inspiration from other municipalities has all the time been crucial, Östersund participates in various kinds of cooperation initiatives related to sustainability and transport - Within the municipality, there is an environmental management system where all units draft their own environmental goals and measures and are monitored by both the municipal management and outside auditors - More stability and long-term approach needed from both national and EU level, uncertainty about future rules and regulations hinders the development when it comes to for example subventions and electric cars • 	
Conclusions: <ul style="list-style-type: none"> - Sustainability has been an important issue for the municipality since the 1990s and implemented via a specific system in all sectors in the municipal organisation - For sustainable transport, especially national funding essential - Two permanent vacancies for work with sustainable transport have been important, vacancies set after years of working with national and EU funding as a background - Cooperation with other municipalities and other actors and companies necessary - Long-term approach from national and EU level needed - Clearer regulations and stronger efforts from national level needed in relation to renewable fuels and the related development 	

Sweden, Jämtland	
Institution	County Administrative Board Jämtland
Date	15.03.2013
Present at meeting	Margareta Persson, Eva Engström, Liisa Perjo
Main points discussed: <ul style="list-style-type: none"> - Work with sustainable or ecologic agriculture in Jämtland started already in the 1980s', first driven by individual farmers interested in the issue. - In late 1980s' a national aid was established for alternative agriculture which put the 	

<p>question into the agenda. In Jämtland a decision was also made to become ecological in all region.</p> <ul style="list-style-type: none"> - EU support has been important, from the start support was granted for type of farming that was already taking place in Jämtland where the preconditions for ecologic agriculture have been good. The formulations in the support system have had a large effect on the development of sustainable agriculture. - Lack of long-term approach in agricultural policy as an obstacle for the development of sustainable agriculture. Adjustments to requirements for support requires a long time and the requirements can have changed during the time. Uncertainty for farmers. - Public procurement of municipalities should be developed to favour seasonal products from Jämtland, lack of knowledge - Consumption an important factor in the development, market demand
<p>Conclusions:</p> <ul style="list-style-type: none"> - More long-term approach needed in agricultural policy - Clearer goals in EU agricultural policy would be favourable

Sweden, Jämtland	
Institution	Östersund municipality
Date	15.03.2013
Present at meeting	Carina Otterfalk, Liisa Perjo
<p>Main points discussed:</p> <ul style="list-style-type: none"> - The interviewee does not personally work extensively with issues related to green economy - High awareness on sustainability issues in the municipality in general - People in Jämtland as a peripheral rural region live close to the nature and therefore can more easily see the consequences of decisions that are not environmentally friendly - Lack of technical innovation can hinder the development, technical development does not necessarily follow the demand - Project funding from the EU have been important for development projects but they are not important for enterprises in most cases because they are too complicated 	
<p>Conclusions:</p> <ul style="list-style-type: none"> - Östersund and Jämtland have work with sustainability issues for at least two decades - High awareness of sustainability issues also amongst entrepreneurs 	

Sweden, Jämtland	
Institution	County Administrative Board Jämtland
Date	22.03.2013
Present at meeting	Hans Halvarsson, Liisa Perjo
<p>Main points discussed:</p> <ul style="list-style-type: none"> - More systematic work with green economy since the Agenda 2000 - Climate and energy issues as an important part of the regional development strategy 	

<ul style="list-style-type: none"> - Funding opportunities from the EU level have been important, funding project work but also important in funding related research on especially the forest sector at Mittuniversitetet - Economic issues still important and the lack of economic incentives can hinder the development, for example tax system as economic instrument influencing the development of green economy could be further developed - The preconditions for sustainable agriculture are good in Jämtland and also especially among other things could biodiesel from forest raw material be more developed, big potential
Conclusions: <ul style="list-style-type: none"> - More economic incentives are needed, could also be developed in relation to taxes, long-term approach needed - In the next programming period, the EU will be more strongly steering the development towards green economy which is also needed

Sweden, Jämtland	
Institution	The Regional Council of Jämtland
Date	22.03.2013
Present at meeting	Ulf Von Sydow, Liisa Perjo
Main points discussed: <ul style="list-style-type: none"> - Regional development strategy includes loosely defined goals related to sustainable development - In the region the aim is to use a broad definition of sustainability - The region is in the process of writing its new regional development strategy where sustainability issues shall be included in all areas and sectors - Linkages and cooperation between EU, national and regional level functions well but it can be challenging to drive the issues down to the municipal level, especially because Jämtland has many small municipalities with weak economy that focus on survival - National goals in relation to sustainability and environment are low in many cases from the regional perspective - National tax system could be stronger in steering towards sustainable development, taxes as stick or carrot 	
Conclusions: <ul style="list-style-type: none"> - National level should set higher and clearer target - Tax system should be used more to steer towards sustainable development - High regional ambition exists but mostly because of economic reasons it is not always possible to commit small municipalities to engage in all sustainability issues 	

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