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# **Medel-Svensson under Global Change**

**Vulnerability assessment of the Swedish way of life**



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**The authors produced this report as part of an academic course assignment. Their  
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# 1 Introduction

The typical Swedish way of life encompasses a broad range of traditions, attitudes and values within the Swedish society, closely related to activities and relaxation in nature, partly supported and facilitated by the Swedish social security system. During several decades, the Swedish life style has flourished, but recently the Swedish government has expressed a concern regarding the future possibilities of the Swedish population to continue this typical way of living, given future global change.

The aim of this report is to produce a first step towards a qualitative national vulnerability assessment of the Swedish way of life, taking into account future global changes. By global change is meant the possible changes in climate and changes in policies regulating economy, education and social security, together with developments in technology and science on a global and regional scale.

## 1.1 What is the “Swedish way of life”?

Firstly we have included a section that further describes what most of people recognize as the essence of everyday Swedish life including some of the reasons behind the international known phenomena that we call the “Swedish way of life”.

When the opportunity arose, Sweden flung itself headlong into the modern era. Its remote position on the map, its remarkable capacity for staying out of wars and its endless supply of timber and ore made Sweden both a rich country and an unusual one by international standards. Strong and responsible civil organizations, and a comparatively equal distribution of income, are other factors which may explain the remarkable social peace that accompanied Sweden's transformation from a poor, agrarian economy to a highly developed industrial nation in a rather short period of time. The last point may explain the ongoing close relationship that Swedes have with their natural environment. But since the vast majority of Sweden's territory is forests and lakes, country life influences the city and the people here, not the other way around. Nature is an important element in the life of a Swede; perhaps only a Swede would have been able to accomplish the vast classification of the plant, animal and mineral worlds as Carl Linnaeus (1707-1778) did in his *Systema Naturae*. Most Swedish are really waiting for their weekend or vacation to come, in order to be able to just go outdoor. Sweden is also one of the rare countries making the nature a right for everyone with its special rule “Allemansrätten”. Further, while other countries experienced conflicts and class divisions, Swedish citizens enjoyed a consensus of opinion and are often found afraid of all kind of conflicts.

The active participation of people in a wide variety of civic associations (such as sports clubs, study circles, charity organizations, political and religious organizations, parents' associations, consumer co-operatives, farmers unions, cultural associations, birdwatchers associations, etc.) should be stressed. All such organizations have longstanding traditions in the Swedish society. Although good data on membership in civic associations from earlier times is scarce, an indicator of the massive involvement by the Swedish people in civic organizations could be that in 1992, every adult Swede was a member of 2.9 different associations, on average (Statistics Sweden, Society Activities in Sweden - a Statistical Illustration, 1993).

For most Swedes, sport is not just an activity but a way of thinking, a philosophy. It is simply an essential component of their life. This is encouraged by the government and big companies, which often participate to the cost of their worker's famous sportive activity.

Swedes are really protective of their distinctively seasonal feast (such as the cray fish party, Santa Lucia, Midsummer, etc.), holidays and customs (e.g. do not forget to take off

your shoes when you enter a Swede's home!). However, they are threatened by too much nationalism (2005 was the year of the first legal celebration of the Swedish national day!). The Swedes are divided when it comes to considering their identity. On one hand they are proud of their own history, although they also become uncomfortable when confronted with some parts of it (e.g. their openly neutral position in World War II, although Sweden allowed Nazi troupes to cross their territory to invade Norway). On the other hand, though Sweden is a member of the European Union, it has refused the euro.

Another aspect of the comparatively equality existing in Sweden besides the relative even distribution of income, and gender equality is the fact that Swedes feel comfortable seeing their politicians, business executives or even members of royalty moving about freely without any form of protection from bodyguards. Finally Swedes are avoiding stressful situations. The stress at work, school but also inside the family has to be minimized as much as possible. For example, there are no grades at school until the child is 14 years old, this in order to avoid the stress coming from competition.

**But in the end the Swedish want to live in a fair society based on trust and tranquility (i.e. non stressful), a society where nature has to be preserved. To achieve the latter the maintenance of ecosystems services supporting outdoor recreation and open landscape is of paramount importance.**

## **1.2 The falling wall of the “Swedish way of life”**

Lack of economic growth in the last decades, has started to erode the welfare system. During the last two decades, economic growth has been sluggish, and since 1991, a severe economic recession has hit the country. Per capita income has declined for several consecutive years, and is today lower than European Union average. Unemployment has reached its highest level in sixty years. The traditional welfare system is being seriously questioned and transformed, and new solutions to new problems are being sought. Sweden's entry, in January 1995, into the European Union has likely participated in reduce the differences between Sweden and other EU members further. The future of the Swedish welfare society and way of life will depend, to a great extent on how problems are tackled now.

## 2 Methods

To assess the Swedish way of life under global change we applied a vulnerability assessment approach. Vulnerability, here, is defined as:

*“the degree to which a system is susceptible to, or unable to cope with, adverse effects of [global] change... Vulnerability is a function of the character, magnitude, and rate of [global] change ... to which a system is exposed, its sensitivity, and its adaptive capacity” (IPCC 2001a).*

This definition includes three elements: exposure, sensitivity and adaptive capacity. Combining the exposure and the sensitivity of a region results in the potential impact (Schröter, 2001, IPCC 2001a). The vulnerability can then be evaluated as a function of the potential impact and the adaptive capacity of a system. Adaptive capacity is:

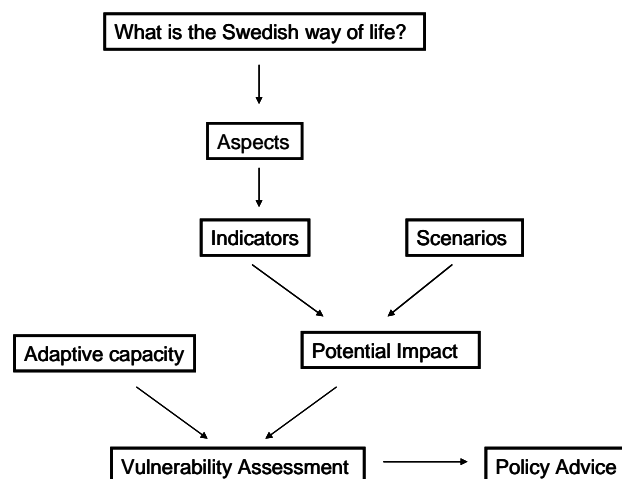
*“...the ability of a system to adjust to [global] change (...) to moderate potential damages, to take advantages of opportunities, or to cope with the consequences” (IPCC 2001a).*

Our main stakeholder in this assessment process was the Swedish government, which formulated the aim of the case study: Vulnerability assessment of the Swedish way of life. In order to answer the question we will explore:

1. The potential impact of global change onto selected aspects, which symbolise the Swedish way of life on a national scale.
2. Adaptive capacity of the society to respond to the projected changes.

The time frame for the assessment includes the current state, and a projection of the state of the Swedish way of life in year 2050.

Our approach to assess the vulnerability of the Swedish way of life is illustrated on figure 1. The aspects of the Swedish way of life were examined by an ‘expert evaluation’ including three Swedish inhabitants. According to them the three most important aspects of the Swedish way of life were: Open landscape, Wellness and Outdoor recreation (Figure 2). These aspects were further elaborated in this report.



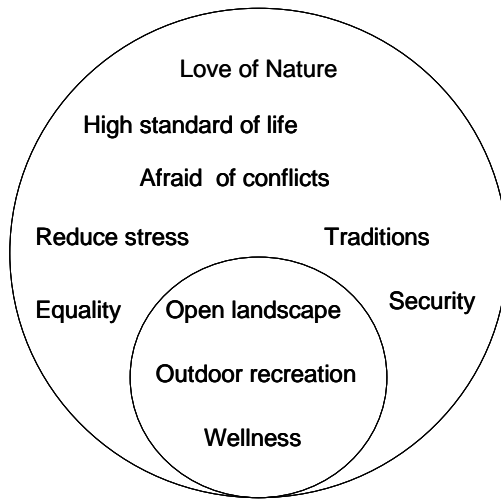


Figure 2. Aspects of the Swedish way of life mentioned by the expert panel consisting of three Swedish inhabitants. The three most important aspects are enclosed in the small circle.

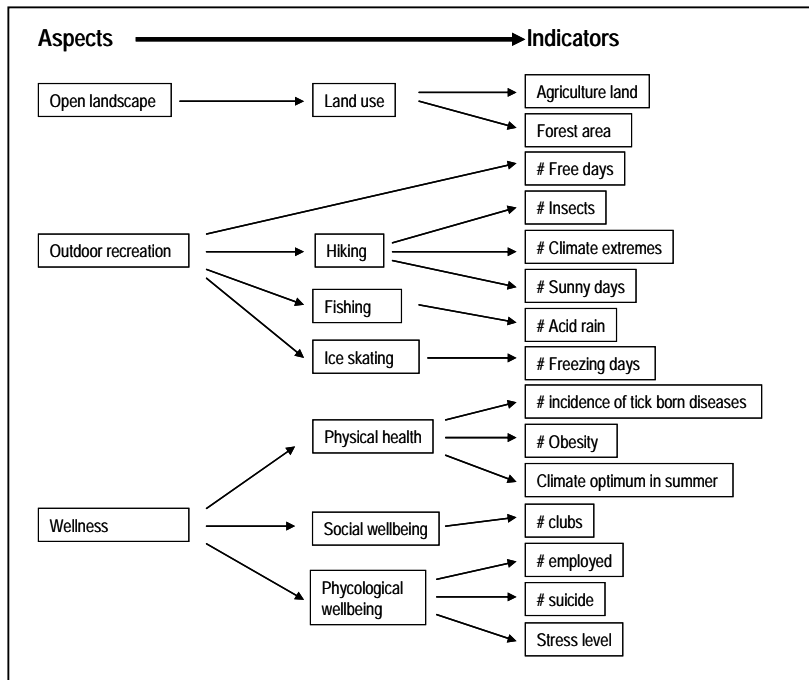


Figure 3. From Aspects to Indicators

Afterwards indicators for the three selected aspects were chosen. This was also done by an 'expert evaluation' and resulted in the selection of the 15 indicators presented in figure 3. To proceed in the assessment an evaluation of the potential impact of global change onto the aspects of the Swedish way of life was developed by qualitatively specifying (--, -, 0, +, ++) how the chosen indicators would evolve in the future according to two scenarios. The scale (--, -, 0, +, ++) was used to illustrate the plausible trends in these indicatorshow the predicted change in the indicators affects the aspects.

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The two scenarios chosen are the A1 (global and low regulation) and B2 (regional and high regulation) scenarios of the Intergovernmental Panel of Climate Change (IPCC 2001b) downscaled to Sweden for a number of drivers, e.g. economy, social structure and technology (see section 4). The Swedish scenarios were called “DOG” and “WOLF” to emphasis the more caring against the more competitive characters of these two animals.

In a next step we focused on the adaptive capacity of the Swedish society under the projected global change, first in terms of the overall and general adaptive capacity and later in respect to the adaptive capacity required to sustain the Swedish way of life. Traditionally adaptive capacity was defined as a measure of the functioning and control of ecological systems (O’Brien et al., 2003). Nowadays the term is extended to social systems where it stands for the ability of communities to absorb external changes and stresses while maintaining the sustainability of their livelihood. It describes the ability to recover from stresses, and is connected to robustness, strength and/or health. (O’Brien et al., 2003).

The assessment of the general adaptive capacity on the national level is shaped by the macro-economic situation. General indicators are for example the GDP or employment diversity of a country. In this respect the national adaptive capacity is a matter of wealth, technology, education, informational skills and infrastructure in a positive, reinforcing relationship (see chapter 5). The evaluation of the adaptive capacity of Sweden to sustain its way of life as expressed with the chosen indicators was qualitatively assessed using the same categories (i.e. --, -, 0, +, ++ ) as for the potential impact.

The potential impact evaluated against the adaptive capacity resulted in our evaluation of the vulnerability of the Swedish way of life.

### 3 Current status of the three aspects

#### 3.1 Open landscape

Today almost 55 % of the Swedish land area is covered by forest and more than 95 % of the productive forests are used for forestry sector (Statistical Yearbook of Forestry 2005). The two dominant tree species are pine (*Pinus sylvestris*) and spruce (*Picea abies*), but mixed deciduous forests can be found in the south. Generally the condition of the forest is healthy; however, the spruce plantations in the southernmost counties grow slightly outside their optimal temperature range, which have made them more susceptible to weather extremes, such as wind throws (Schlyter et al., 2005).

The agricultural area has decreased by 3 % during the last 10 years, since Sweden joined the EU, although the number of farming companies have decreased by 27 %. This means that the farms have increased in size (Jordbruksverket, [www.sjv.se](http://www.sjv.se) 2005-09-26). Traditional grasslands are the most species rich habitats in Sweden (Svensson, 1998), and have been reduced by 19% during the last century (Berns, 1994).

#### 3.2 Outdoor recreation

In Sweden ca 2/3 of the men and 1/2 of the women were physically active more than 30 minutes per day in 2004 (Boström & Nyström, 2004), and a third of the population were physically active more than an hour per day. Many people have access to training during one working hour per week, and close to 3/4 of the population receive support from their employer to practice sport. One of the socio-economic factors influencing the possibility today for a Swede to go hiking (for one or several days), ice-skate or fishing, is the amount of holiday, which amounts to 5 weeks per employee and per year (The Holiday law, Semesterlagen 1977:480).

Additionally the number of days below zero (figure 4a-c) in the winter determines the possibilities today to go ice-skating, and the number of sunny days influences the amount of hiking days (figure 5).

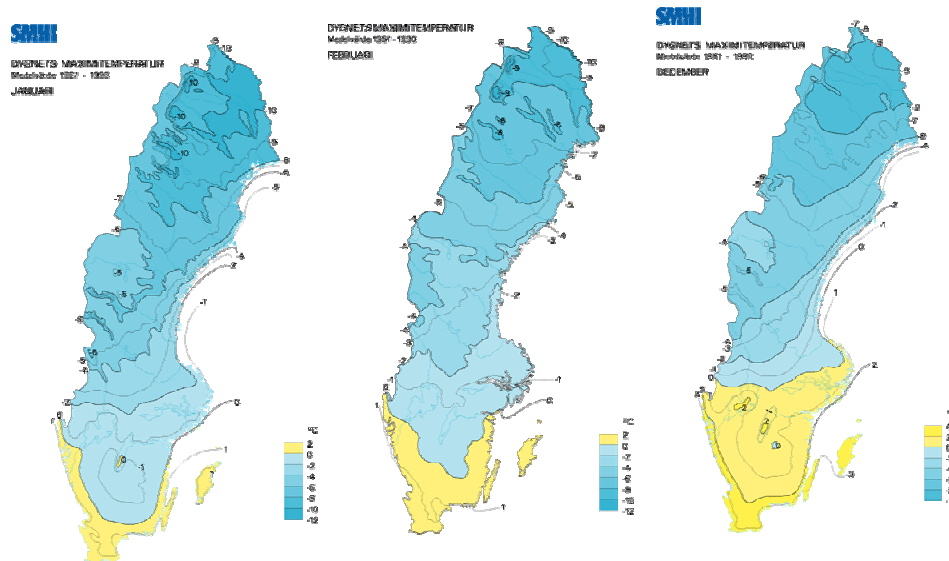


Figure 4. The average of the daily maximum temperature in a) December b) January and c) February, during 1961 to 1990 (The Swedish Meteorological and hydrological Institute, [www.smhi.se](http://www.smhi.se).)



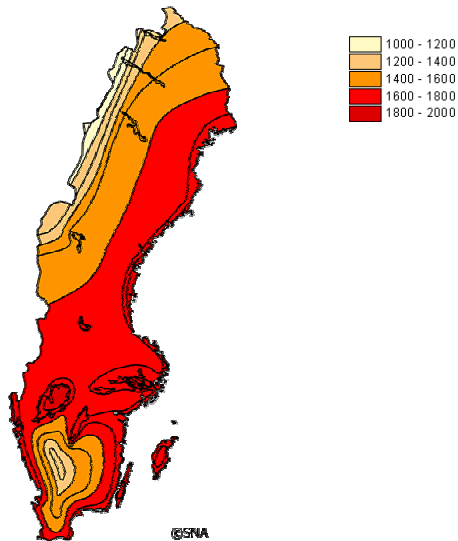


Figure 5. Number of hours with sun during a year, from the Swedish National Atlas, [www.sna.se](http://www.sna.se). The geographical distribution of the sunny hours depends on the amount of cloudiness (in summer cloudiness is less along the coasts and above the greater lakes) and the length of the day (latitude)

### 3.3 Wellness

In 2004 almost half of the population considered themselves to have a good health (Boström & Nyström, 2004), but on the other hand 21 % of the men and 17% of the women felt that they had more than one health problem (concerning alcohol, tobacco, food, obesity, psychological health). Health problems were greater among people with economic difficulties low income and/or low education (Figure 6.). Moreover around 3 million people suffer from overweight, and 700.000 of them suffer from obesity in 2004. In total 14% of the population were not physically active during their spare time, and this was most common among people with short education (Boström & Nyström, 2004).

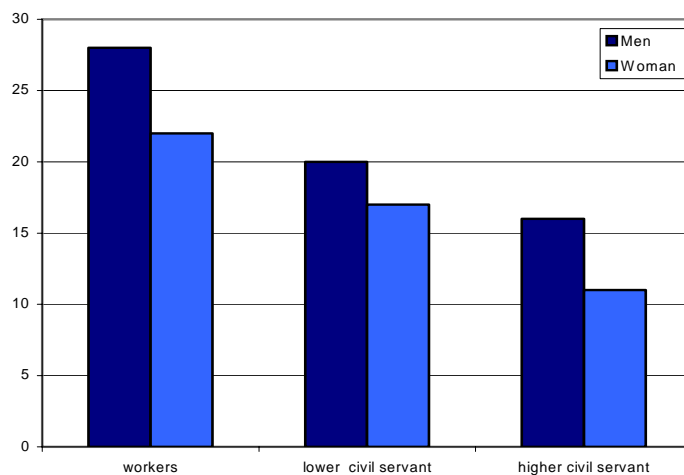


Figure 6. Percentage of the population in Sweden, 2004, aged 18 to 84, who had two to five health related problems, divided according to their socio-economic status. Data from (Boström & Nyström, 2004, p 34)

In total 14% of the population were not physically active during their spare time, and this was most common among people with short education (Boström & Nyström, 2004).

In 1999 the number of suicides were the lowest since 1969 (just above 1.500 in total). This decrease was not evident among people younger than 25 years (figure 7.) for which the number of registered suicide attempts had increased (Mäkinen & Jiang, 2002). Suicide remained the most common cause of death for people aged 25 to 44 years. In 2005 the number of total number of suicides are still around 1.500 per year. (www.sll.se/suicide, 2005-09-27).

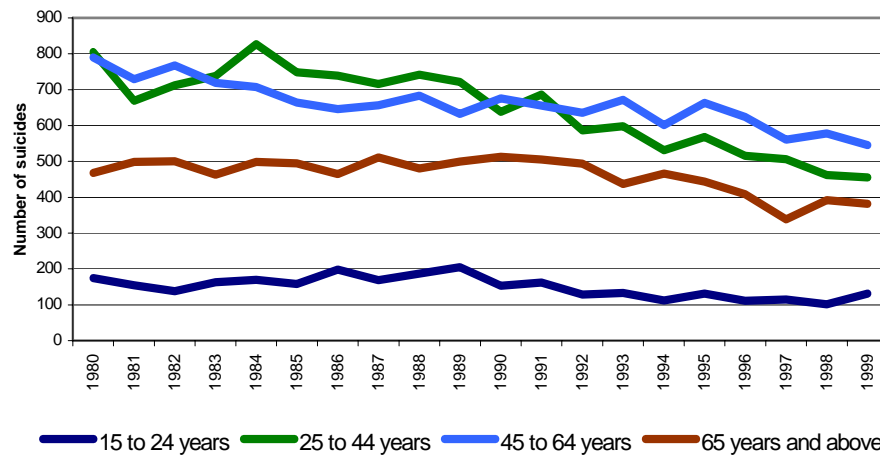


Figure 7. The number of suicides in Sweden within different age groups, modified from (Mäkinen & Jiang, 2002)

A link between wellness and the Swedish appreciation of nature is well represented in a survey included in the Swedish National Atlas (www.sna.se), where it was shown that most people rated visiting relatives or a holiday house, travelling to walk in nature or just travel to find peace and quietness, the most important reasons for an overnight stay during their spare time (figure 8 a-c).

The unemployment rate, which often influences the perception of health (Boström & Nyström, 2004), was officially 6.5 % in August 2005 (Statistics from the Swedish statistical institute, [www.scb.se](http://www.scb.se), 2005-09-27), whereas the total “broad” unemployment, including the active population, which is unemployed or does not study fulltime, reached 21.1% in August 2005.

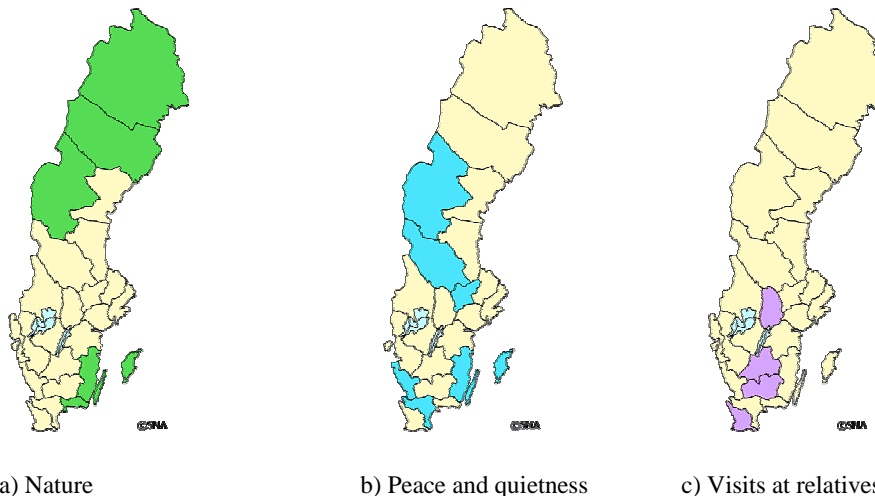


Figure 8. Three maps showing the counties in Sweden, to which people would like to go during their spare time, for an overnight stay, in a) nature, b) for finding peace and quietness, and c) visits at relatives and friends. (www.sna.se)

In this chapter the drivers of global change impacting on Sweden and their respective effects on the Swedish future are emphasised. To evaluate the future development of Sweden two scenarios have been applied that illustrate different trends of plausible changes. The two scenarios chosen are closely related to the IPCC A1 and B2 scenarios, which have been used by other research groups, such as ATEAM, IPCC, IMAGE and EUruralis. Taking these as broad guidelines storylines have been developed to better apply to the Swedish situation. Most scenario studies use four scenarios. We focused on two scenarios instead. Being aware that the selection of two scenarios is mirroring extreme cases we consider the two scenarios as the boundary conditions in which the Swedish society will probably develop.

The first scenario featuring a focus on the regional economy with significant governmental regulation was called the DOG-scenario. We have chosen this picture representing the caring character of dog, its preference for a family or a local community and its domesticated behaviour. In comparison the second scenario stands for a global economy and low governmental regulation. It is called the WOLF-scenario. Here the competitive character of the wolf characterises the nature of society's interactions with other systems. There is no local or regional orientation, as exemplified by the vast territories wolves cover over their lifetime.

In table 1 the potential developments of Sweden under these two scenario types and according to the drivers shown in the centre row are formulated. These boundaries or framework condition set by the scenario storylines indicate a plausible range of futures for Sweden.

Table 1: Summary of the storylines (projections for 2030)

Scenario DOG	Drivers	Scenario WOLF
Closest to B2		Closest to A1
Governmental regulation, regional economy.		Low regulation, global economy
	<b>Economy</b>	
The economy of Sweden is striving towards self-sufficiency within the Northwest of Europe. The growth rate is relatively low. The income is equal distributed and medium high.	Growth & GDP	Sweden is totally open to the world market. The growth rate of the Swedish economy is high.
	Income	There is income inequality: the society is characterised by a wide range between the poor & the rich.
Some sectors of the economy are subsidised, trade barriers are implemented mirrored in low trade volumes.	Production & Trade	The economy focuses on competitive sectors on the international market – trade volumes are high.
	<b>Social Structure</b>	
The population figures are decreasing.	Population	The population figures are decreasing.
Due to a high regulation the immigration is driven by social compassion (e.g. refugees). People are used to have one secure job and 25 holidays per year.	Immigration	Immigration rates are driven by the needed work force (Green Card system).
The day-to-day life is structured and organised. The government provides security and a safety net.	Employment	More than one job per person is common, the amount of holidays is not assured.
	Stress & Security	People are taking opportunities, the daily life is less structured. People have to organise their own safety net.
	<b>Technology</b>	
The emphasis in technology is laid on basic and robust solutions for environmental & social issues. It is sustainability driven.		Technology is used to raise productivity. It has a strong economic incentive. Focus is laid on high tech and progressive research.
	<b>Science</b>	
State invests in science with limited budget.		Companies invest in science, high budget under the prospect of profit.
	<b>Education</b>	
Education is accessible to everybody assuring an overall high level of education.		There is a basic education for everybody. The educational system is selecting and promoting an elite by excellence.
	<b>Institutions &amp; Governments</b>	
The governmental social system is providing security for the people. Social care facilities are centralised.	Social System	The national care and social system is not providing security for all inhabitants. Self-insurance is the commonly needed which can be adjusted to individual needs.
State laws are regulating right and justice which is strongly governmental regulated. People do not feel the need to solve problems at court.	Justice	The system of justice is organised along individual claims – “see you in court”-mentality.
Spatial organisation and development is occurring according to national legislation. Institutions are strict and inflexible.	Spatial Planning	Spatial planning and development is happening within a national framework. Legislation leaves more action space for owners. The systems reacts flexible.
	<b>Rural development Tourism &amp; Recreation</b>	
Rural development is supported by subsidies.		Remote development and rural activities have to fit in market schemes and need to be profitable.
Recreational activities are enjoyed regionally and frequent. Tourism and holidays are spent within the regional or local surrounding.		There is normally one long holiday throughout the year which is enjoyed in foreign countries. Recreational activities need to be organised within the close surrounding when daily life is scattered.
	<b>Climate</b>	
The warming of the atmosphere is slightly lower. There are to be experienced slightly less climate extremes compared to A1. The difference will not be felt until the 2050s.	Climate Projections	The projections for climate change are slightly higher than under B2, also extreme weather events will occur slightly more often.
An emphasis is laid on green energy and low consumption patterns. People are environmentally aware. Response mechanisms are mitigation driven and pro-active.	Climate Policy	Climate is not regarded as crucial issue in policy debates. Energy supply is cheap (market driven) and response rates to upcoming problems adaptation driven and reactive.

## 5 Results

In this chapter the results of the vulnerability assessment are presented. The potential impact, adaptive capacity and vulnerability of respectively the aspects *Open landscape* (5.1), *Outdoor activities* (5.2) and *Wellness* (5.3) are described below.

A number of tables are presented. For each indicator one or more drivers are considered. For each driver we described how it is expected to develop under the two different scenarios. This is done assigning plusses and minuses. For each indicator we summed up the effect of the drivers. Using this values the overall affect on the aspects were evaluated (see also chapter 3 – methods).

### 5.1 Open landscape - potential impact, adaptive capacity and vulnerability

Table 2. Open landscape – Potential Impact

Indicator	Drivers	WOLF	DOG	Description
<i>Agriculture land</i>	Climate	+	+	Warmer climate and higher CO <sub>2</sub> will increase potential suitable area for agriculture land in both scenarios
	Economy	- -	0	WOLF: Absence of subsidies and international competition will reduce agriculture. DOG: Subsidies will secure agriculture income.
	<b>Overall</b>	-	+	Decrease of agriculture land in WOLF. Increase in DOG.
<i>Forest area</i>	Climate	+	+	Warmer climate and higher CO <sub>2</sub> will increase potential suitable area for agriculture land in both scenarios.
	Economy	+	-	WOLF: Forestry is profitable due to a large international market for timber. DOG: Regional market too small.
	<b>Overall</b>	++	0	
<b>Overall</b>		-	+	

Table 3. Open landscape – Adaptive capacity

Indicator	Drivers	WOLF	DOG	Description
<i>Agriculture land</i>	Spatial planning	0	+	No regulation in WOLF. Strict spatial planning in DOG.
<i>Forest area</i>	Spatial planning	0	+	
<b>Overall</b>		0	+	

Table 4. Open landscape – Vulnerability

Indicator	WOLF	DOG
<i>Open landscape</i>	-	++

The potential impact on the aspect ‘Open landscape’ is negative in the Wolf scenario because of declining agriculture land and expansion of the forest area. This will lead to more closed landscapes. There is no adaptive capacity for the Wolf scenario because in a liberal world strict spatial planning is not applied. Therefore the Vulnerability of the ‘Open landscape’ in the Wolf scenario is negative. In the Dog scenario the potential impact on the aspect ‘Open landscape’ is positive. Climate change will favour agriculture and because of subsidy schemes farmers will earn a good living. Next to a positive impact on the open landscape there is a strict spatial planning that preserves the open landscape. Urbanisation will have minor influence. Putting the potential impact and the adaptive capacity together the Vulnerability of the ‘Open landscape’ in the Dog scenario is low.

## 5.2 Outdoor recreation - potential impact, adaptive capacity and vulnerability

Table 5 – outdoor- potential impact

Indicator	Drivers	WOLF	DOG	Description		
# Free days	Economy	--	+	In DOG we expect more free days because of higher productivity per hour and we want to keep employment. In WOLF we have to work more to stay competitive with the rest of the world.		
	Social structure	-	+	In DOG active stress reduction by reducing the working hours per day. In WOLF there is less government regulations on working hours.		
<b>Ice skating</b>						
# Freezing days	climate	--	-	The climate warms especially in winter. Spring comes sooner and autumn is prolonged.		
	overall	--	+			
<b>Hiking</b>						
Sunny days	Climate	+	-	+	-	More dry days in the south in both scenarios and more rainy days in the north.
Insects	Climate	--	-	-	-	
# Climate extremes	Climate	-	-	-	-	Warmer climate and therefore higher reproduction rate of insects will affect comfort. In both scenarios more extreme climate events. This will affect hiking negatively because of increased danger and discomfort.
	overall	-	--	0	-	
<b>Fishing</b>						
Acid rains	Technology	+	++	++	In both scenarios there is technological development but there is more emphasis on sustainable technology in DOG. Industrial development is higher under WOLF. There is a potential for more pollution. Also the use of energy is higher and as a consequence the emissions.	
	Economy	-	0	0		
	Overall	-	+	++		
Overall		--	+	+		

Table 6. Outdoor – adaptive capacity

Indicator	Drivers	WOLF	DOG	Description
# Free days	Fully organised tours	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div><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Table 7 – outdoor - vulnerability

Indicator	WOLF	DOG	Description
<b>Ice skating</b>	-	+	WOLF: the conditions for outdoors activities get worse DOG: the conditions for outdoors activities are improved.
<b>Hiking</b>	0 -	0 -	
<b>Fishing</b>	0	++	
<b>Overall</b>	-	+	

The potential impact on the Outdoor recreation in the Wolf scenario is for most drivers negative, whereas it is positive or neutral in the Dog scenario. The adaptive capacity is higher for the Wolf scenario but in most cases it is not enough to overcome the negative potential impact. This leads to a vulnerable outdoor recreation under the Wolf scenario, whereas outdoor recreation is not vulnerable under the Dog scenario.

### 5.3 Wellness - potential impact, adaptive capacity and vulnerability

Table 8 – wellness – potential impact

Indicator	Driver	WOLF	DOG	Description
<b>Physical health</b>				
obesity	income	-	0	Lower income means more obesity; In WOLF there will be more people with low incomes.
	education	-	0	Lower education means more obesity; In WOLF more people will have a lower level of education
# people with tick born diseases	Climate	--	-	In WOLF slightly warmer climate than in DOG and therefore better tick reproduction.
	Social security	0	+	In WOLF people have to pay to get a vaccination. In DOG the government provides tick prevention program.
Climate optimum in summer	Climate	0	-	It gets warmer and wetter in summer in the north. In the south it will be warmer but dryer.
	<b>Overall</b>	-	0	
<b>Social wellbeing</b>				
# clubs	Social system	-	0	There is no subsidy for clubs in WOLF and there still is subsidy in DOG. Clubs will have more financial possibilities.
	Economy	-	+	In WOLF there is limited free time; in DOG people have more free time and use it to meet each other.
# employed	Education	-	0	People of low education they stay more at home.
	Economy	++	-	More unemployment in DOG because of there are strict regulations and small enterprises are not encouraged to start up. It is also difficult to fire people in DOG. In WOLF the economy is flexible and creates more jobs.
	Social system	+	-	The state will in DOG pay more money to unemployed than in WOLF.
	<b>Overall</b>	0	0	In WOLF there are better social perspectives for the rich and less for the poor. In DOG there is social equality.
<b>Psychological wellbeing</b>				
# suicides	Climate	-	-	Reduction of snow cover will increase darkness and will lead to more depressions.
	Economy	-	-	Bad personal economy leads to more suicide under WOLF; under DOG there will be more people unemployed.
	Social system	-	+	In WOLF you have to pay for help; in DOG there is state help.
Stress level	Economy	--	-	In general there is more stress in WOLF because of high competition and deadlines etc. In DOG there is also more stress because of less opportunity, more unemployment and more regulations.
	<b>Overall</b>	-	-	
<b>Overall</b>		--	-	

Table 9 – adaptive capacity – wellness

Indicator	Driver	WOLF	DOG
<b>Physical health</b>			
Obesity	Quality of the cantina	0	+
	Fitness programme	+	+
	Diet pills	+	0
	Nutrition education	0	+
	Vaccination	0	+
# people with tick born diseases			
Climate optimum in summer	Air conditioning	+	0
	Adapted working hours	0	+
	<b>Overall</b>	+	+
<b>Social wellbeing</b>			
# clubs/associations	Dedicate money	0	+
# employed	Trainings	0	+
	<b>Overall</b>	0	+
<b>Psychological wellbeing</b>			
# suicides	Access to help (free telephone lines, subsidized psychologists)	0	+
	Anti-depressive pills	+	0
	Relaxation activities	+	+
Stress level	<b>Overall</b>	+	+
<b>Overall</b>		+	++

Table 10 – vulnerability - wellness

Indicator	WOLF	DOG	
<b>Physical health</b>	-	+	WOLF: The strategies taken are not enough to cope with the impact
<b>Social wellbeing</b>	0	+	
<b>Psychological wellbeing</b>	-	-	WOLF and DOG: strategies taken are not enough to cope with the impacts.
<b>Overall</b>	-	+	

The aspect of Wellness is divided in physical health, social wellbeing and psychological wellbeing. Each of these indicators is vulnerable in the Wolf scenario. In the Dog scenario the physical health and the social wellbeing develop in a positive way. Only the psychological wellbeing is vulnerable in the Dog scenario. The overall positive development in the Dog scenario is due to better adaptive capacity for that scenario. Government acts more proactive to new potential impacts.

## 5.4 Synthesis

Table 11 - Synthesis – Vulnerability of the Swedish way of life

	Open landscape		Outdoor recreation		Wellness	
	WOLF	DOG	WOLF	DOG	WOLF	DOG
Potential impact	-	+	--	+	--	-
Adaptive capacity	0	+	+	0	+	++
Vulnerability	-	++	-	+	-	+

Summing up the vulnerability of the three assessed aspects of the Swedish way of life results in Table 11. This shows a positive development of the Swedish way of life under the Dog scenario and a negative development under the Wolf scenario.



## 6 Synthesis – conclusions about the vulnerability of the Swedish way of life

Our central question was: ‘How will global change affect the Swedish way of life?’ To answer this question we assessed the impacts of two scenarios on the Swedish way of life. We then looked at the possible adaptive strategies to cope with it and then we assessed the vulnerability. The outcomes of both scenarios are:

### A1 – Wolf scenario

- Overall negative effects of global change on the Swedish way of life.
- Higher adaptive capacity in this scenario because of higher GDP; the adaptive capacity is not enough to overcome the negative impacts of global change.
- There will be a sharp distinction between the rich and the poor; the rich might be able to pay for pseudo-Swedish way of life. For the poor the Swedish way of life is no longer reachable.
- In itself this scenario presents an increase in inequality. This would undermine the current important characteristic of the Swedish way of life towards relative equality.

### B2 – Dog scenario

- The B2 scenario has both positive and negative effects for the Swedish way of life.
- The overall outcome is much better than the A1 scenario.
- Equality is preserved but at quite high cost for the government
- It is unsure if all adaptive measures can be paid for by public expenses.
- Tax raises are probably needed.

### North and south

For both scenarios it is noticeable that climate change will affect differentially the north and the south of Sweden. Outdoor activities for example will probably enjoy better conditions in the south because of more sunny days while in the north an increase in rainfall will probably worsen outdoor possibilities. On the other hand the number of freezing days will probably decline in the south. Some impacts of climate change will thus favour the north and others the south.

### International co-operation

Sweden cannot be envisaged as a country separate from the rest of the world. This would be the case in the B2 – Dog scenario when the rest of the world may opt for an A1 – wolf scenario. Sweden should co-operate with other (Nordic) countries to become a robust entity in a globalizing world.

The two scenarios we have assessed can be understood as two extremes. There might be a way in between these two, but in our opinion this is not very probable. To maintain the Swedish way of life we strongly advise the Swedish government to build international alliances with other countries in Northwest Europe.

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