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Land Accounting

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1. SUMMARY **5**

2. INTRODUCTION **5**

3. LAND USE **6**

3.1 INTRODUCTION 6
3.2 UNDER CULTIVATION 6
3.2.1 Agriculture *6*
3.2.2 Forestry *6*
3.3 BUILT-UP LAND 7
3.3.1 Individual dwelling / Collective dwelling *8*
3.3.2 Other buildings *8*
Agriculture 8
Mining 9
Energy 9
Commercial land 9
Social and health services 9
Education 10
3.3.3 Structures *10*
3.4 RECREATIONAL LAND 10
3.4.1 Sport and outdoor leisure activities: publicly/privately owned *10*
The Right of Public Access 11
3.5 OTHER LAND 11
3.5.1 Derelict land and dump sites *11*
3.5.2 Nature conservation or protection *11*
Definition, data and data source 11

4. LAND USE AND MONETARY VALUES **13**

4.1 SOURCES AND METHODS 13
4.2 PLANS FOR THE FUTURE 13

5. REGIONAL AND QUALITY ASPECTS **14**

5.1 INTRODUCTION 14
5.2 LAND USE IN URBAN AREAS 14
5.2.1 Background *14*
5.2.2 Survey method *14*
5.2.3 Results *16*
Changes within the localities 16
Expansion 17
Total change in land use in localities 18
5.3 BUILT-UP LAND IN COASTAL AREAS 19
5.3.1 Background *19*
5.3.2 Some results *19*
5.4 AREAS UNDISTURBED BY NOISE 22
5.4.1 Methodology *22*
5.4.2 Sources of noise *22*
5.4.3 Areas affected by noise outside urban areas *23*
5.4.4 Testing of the method *23*
5.4.5 Results of the testing *23*

6. FURTHER DEVELOPMENT OF LAND ACCOUNTS **25**

6.1 DATA SOURCES 25
6.2 CONTAMINATED AREAS AND AREAS IN NEED OF SANITATION 25
6.3 MULTIPLE USE 25
6.4 ACCESS TO GREEN AREAS AND AREAS UNDISTURBED BY NOISE 26
7. REFERENCES 27

Appendix 1: Tables proposed by Eurostat

- Table EU1. Land cover stock and changes - summary (1000 ha)
- Table EU4. Land use stock and changes - summary (1000 ha)
- Table EU5. Land use - monetary value (SEK million), fixed prices
- Table EU6. Land use, detailed changes (1000 ha)
- Table EU8a. Land use by industries, area (1000 ha)

Appendix 2: Tables with regional or qualitative aspects

- Table R1. Land use in localities 1980-1995, hectares
- Table R2. Land use in localities, detailed changes in hectares
- Table R3. Areas disturbed by road noise, km^2

Appendix 3: Type codes of real estates

- Type codes at real-estate assessment as from year 2000

Preface

Statistics Sweden has developed physical environmental accounts since 1993. Accounts for the use of energy and emissions to air are now regularly compiled. This report presents the results of a Swedish pilot study in the area of land accounting.

The report is prepared on commission from EUROSTAT, which supports and co-ordinates development of environmental statistics in the EU member states. The European Commission (DG Environment) has contributed financially to the project. The report is prepared by Veronica Skarborg, Marianne Eriksson and Leif Norman with contribution from Michael Wolf.

1. Summary

At the moment, there are problems in classifying land use according to the NACE-classification. Many different data sources are used for compiling land use statistics and it is not possible to connect the real estate listings with the central enterprise and work place register at Statistics Sweden. There is however a proposal to start a project in the fall of 2002 which will enable this connection to be made in the future.

Furthermore, the Corine Land Cover data will not be available before 2003.

This study is a first attempt to coordinate all the different data sources for land use and land cover aiming at compiling land accounting for Sweden. The study will give information on which parts need further development and what additional work will be needed in the future.

In the suggested framework of land accounts, the regional or qualitative aspects have not been taken into account. These aspects are however of great interest and should be developed in supplementary tables. We have included the following tables of land accounts in Sweden:

- Land use in urban areas, 1980 and 1995
- Built-up areas in coastal zones
- Areas undisturbed by noise

2. Introduction

The total area within the coastline of Sweden is about 450 000 km^2, where the land area is 410 000 km^2. Forest land is the dominant type of landscape with 52 % of the total area of Sweden. Mountains and swamps amount to 29 %, inland water to 9 % and farming land to 8 %. The built-up land is about 2 % of the total area of Sweden.

Land is in general not a scarce resource in Sweden, but in densely populated areas or in areas of major importance for biodiversity or recreation there can be conflicts in land use. Looking at the total population of Sweden, which is barely 9 million people, around 84 % of the population lived in urban areas in 1995. This area correspond to 1.3 % of the total land area.

The ownership of land has a great influence on land use. Today, private owners possess around 40 % of the land in Sweden, which mostly consists of built-up land and farm and forest land. Publicly owned land, around 30 %, is in large part non-productive land as mountains, swamps, etc. or forest land.

3. Land use

3.1 Introduction

The following results and comments concerning source material, uncertainties, etc., derive from Eurostat table 4, "land use, stock and changes" (Eurostat 1999). In this report, it is regarded as the main table of the ones proposed by Eurostat.

The statistics in Eurostat table 4 are relatively compatible to the land use statistics that have been produced in Sweden so far, despite the uncertainty concerning the allocation of the statistics to different NACE-groups and the comparability among the years. The other Eurostat tables are mainly based on the same source material as table 4, but the statistics have been allocated in a different way for each table. This is not however the case for the tables covering monetary data and the additional regional aspects, which are primarily based on other sources.

The data on land cover have been hard to distinguish from the land use data and the uncertainty in Eurostat table 1 is relatively high. The quality will greatly improve when the Corine Land Cover data is finalised and available.

The completed available Eurostat tables are included as appendixes.

3.2 Under cultivation

Table 1. Land use for agriculture and forestry

Land Use	Area (ha)			
	Initial stock 1980	Final stock 1995	Net change	Net changes as % of initial stock
Agriculture	**3 584 570**	**3 563 672**	**-20 898**	**-0.58%**
Growing of crops	3 000 220	2 987 641	-12 579	-0.42%
Growing of vegetables and fruit		339	339	
Farming of animals	584 350	575 692	-8 658	-1.48%
Forestry	**23 501 000**	**22 633 500**	**-867 500**	**-4%**

Source: SCB 1993 and SCB 1998

3.2.1 Agriculture

The total area for agriculture has decreased by 21 000 ha between 1980 and 1995. The information about land use for agriculture is based on two surveys, from 1981 and 1992, which derives their data from all agricultural companies in Sweden, even the ones with an area for growing crops with less than 2 ha.

Information about the alternate use for the 21 000 ha is missing in large parts. Some land has been transformed into forest land and some into urban areas. There's more information about the expansion of urban areas, and where the land comes from, further on in this report.

3.2.2 Forestry

Since the 1920s the amount of forest in Sweden has increased by 600-800 thousand hectares, according to a rough estimate, through afforestation of former arable land and of peat land and moors after drainage. But there has also been a decrease of forest land as a result of the

expansion of urban areas and construction of houses, roads and power lines. Since 1960 there has been a loss of 50 000 ha of forest to urban areas in Sweden. A comparison of the area over time is complicated for several reasons, i.e., the definition of forest has changed. Today forest is defined as land suitable for forestry and is essentially not used for other purposes. This definition is specific to Sweden and is not the same as the definition used in international statistics. The ideal production is at least 1 m^3 per hectare and year. In accordance to this definition, subalpin coniferous woodland, primeval forest and protected forest are not included in land use for forestry.

Table 2. Land use for forestry

Hectares	**1980**	**1995**
Forestry	23 501 000	22 633 500
Subalpin coniferous woodland	612 000	1 000 000
Primeval forest	44 500	..
Protected forest	..	790 000

Source: SCB 1993 and SCB 1998

A comparison of the forest area between 1980 and 1995 is also made difficult since the statistics are based on the National Forest Inventory, which is a sample survey and causes random errors. Quality controls have shown a random error of 5 % for individual counties and less than 1 % for the whole country. In addition to this kind of error, there are other problems such as measure and registration errors, which affect the reliability of the data.

Another problem is that partly protected forest is included in forestry for 1995 (table 1 and 2), while it is unclear if this is the case for 1980 but probably not. Partly protected forest is subject to felling restrictions, but the felling is not totally restricted. Since this is the case, partly protected forest is probably accounted for in both forestry and restricted land.

Looking at the two years of 1980 and 1995, there has been a decrease of forest land by 850 000 ha during this period. This could partly be a result of an expansion of urban areas, but first and foremost it is probably a result of forest being reclassified as nature reserves, national parks or other protected areas. The total land area protected by nature reserves, national parks and nature conservations has increased by 1 347 200 ha (1980) to a total area of 2 780 700 ha. The main part of this protected land area is in the north of Sweden and presumably a big part of it is forest.

Besides the forest land there is other wooded land in Sweden, i.e. land where the growth of the forest is low or where felling is not allowed (protected areas). This land includes subalpin coniferous woodland, primeval forest and wooded swamps. The main part of this land is not included in the tables for forest. In 1995 nearly 790 000 ha (3.4 %) of the forest land was totally protected. This area consists mainly of forest in the proximity of high mountains and forest land in national parks and nature reserves. Additionally 540 000 ha (2.3 %) was partly protected land, because of its nearness to built-up areas or water.

3.3 Built-up land

All land in Sweden is divided into real estates, which include buildings and constructions of different kinds. In the real-estate assessment, each real estate receives a tax assessment value, which is the main basis for the tax assessment. At the real-estate assessment, each real estate is also assigned a type code, which specifies the main use of the real estate. The type codes are included in appendix 3.

3.3.1 Individual dwelling / Collective dwelling

Table 3. Land use for built-up land, dwelling

Land use	Area (1000 ha)			
	Initial stock 1980/81	**Final stock 1995**	Net change	Net changes as % of initial stock
Dwellings	**501.9**	**562.6**	**60.7**	**12.1%**
Individual dwelling	475.2	530.0	54.8	11.5%
Collective dwelling	26.7	32.7	6.0	22.3%

Source: SCB 1993 and SCB 1998

The total area of dwellings has increased over the years, but the statistics have problems concerning their accuracy. The data is gathered from the Swedish real-estate assessment, which does not really convey a correct picture of the land use. This is because the area in the real-estate assessment is based on the real-estate boundary and not just on the land where the dwelling is constructed. Considerable areas, which in fact should not be considered as land for dwelling, are therefore included in the statistics. For example, the land in connection with housing is included, but roads and larger green areas in residential areas are not.

Another issue is that the area for residential properties on farmland is not part of the real-estate assessment. But in these tables this acreage has been estimated as 0.4 ha per agricultural company for 1980 (115 000) and 0.3 ha per assessed house for 1995 (245 000). An adjustment is also made for residential properties with premises. The real-estate assessment doesn't give precise information on how the area should be divided between housing and premises, so the land has been allocated to land for dwelling and land for premises according to a decided pattern. For 1980 there is a margin of error of 15-20 % for the statistics on this type of land.

3.3.2 Other buildings

Table 4. Land use for built-up land, other buildings

Land use	Area (1000 ha)			
	Initial stock 1980/81	**Final stock 1995**	Net change	Net change as % of initial stock
Other buildings	**227.8**	**242.7**	**14.9**	**6.6%**
Agriculture	57.5	61.1	3.6	6.3%
Mining *	27.7	16.0	-11.7	-42.1%
Manufacturing	76.0	76.5	0.6	0.8%
Energy *	6.2	22.0	15.8	254.0%
Commercial land	17.1	18.1	1.0	5.6%
Education and research	12.0	11.5	-0.5	-4.2%
Social and health services	31.4	26.2	-5.2	-16.6%
Non-defined buildings		11.4		

* Inclusive land for earth-excavated units and peat extraction.
Source: SCB 1993 and SCB 1998

Agriculture

The area of land for farm buildings (dwelling excluded), farm courtyards, etc. amounted in 1995 to 61 100 hectares. The area is estimated at 0.5 ha per agricultural company for 1980 and 0.7 ha for 1995. During this period of time there have been big changes in the agricultural politics, which have favoured large farms, leading to an increase in the average size of farms

at the same time as the number of farms has decreased. In 1980 the number of agricultural companies was 115 000 and in 1995 there were only 87 300.

Mining

Since 1980 the mining industry has decreased by 3 300 mines in operation. But the change in area during this period is largely due to a change in the method for estimating the area.

For both 1980 and 1995 the area for mining derives from the nature of the real-estate assessment. Most likely, large areas that are not directly used in the business, like land reserves, leftover land, impediments, etc., are included in the data. As a result, the land use for mining is most likely overestimated; but to what extent is not known.

To get around this problem for 1995, mines with an area of 15 ha or more were controlled on the property map and adjusted when necessary. The mines, which were not found on the map, were adjusted to a maximum area of 15 hectares.

Energy

The area of land for energy amounted to 22 000 ha in 1995. The large increase in area between the two years is principally due to land use for peat extraction for energy use being included in the statistics for 1995. In 1980 there was no information available for this type of land use. The occurrence of this type of activity was very limited by 1980. If peatery were to be disregarded, the increase in land use is only 750 ha.

The source of information on the area of both conventional heat generation plants and distribution plants is the real-estate assessment. For 1995 the area has been limited to 5 ha per tax unit, except for distribution plants where the area is limited to 3 ha.

The area for hydroelectric power stations (excluding restricted areas, water deposits, etc.) is estimated as 1 ha per plant in 1980 and 2 ha in 1995, except for the fifteen largest power plants, which have been estimated as 5 hectares each. The nuclear power stations have, after estimating the area on maps, been calculated as covering an area of 100 ha for each power plant.

Commercial land

Surveys of land use in urban areas, conducted by Statistics Sweden, show that an average of 3 % of land use is for commercial purposes. The information in the real-estate assessment gives a similar result.

In calculating the land use for commercial purposes in thinly populated areas, it has been assumed that the population generates business activity that is somewhat lower in relation to the population compared to urban areas (1 % lower in 1981).

Social and health services

This category comprises land use for public administration, medical care, day nursery, youth recreation centre (not for 1981) and buildings for cultural events, such as theatres, museums etc. Furthermore, land for churches and other buildings for religious activities, cemeteries, vicarages and buildings used for the administration of law and public order are also included.

By using the information in the real estate assessment and some standardized values, an area of 55 000 ha was established for 1980 for social and health services. However, the data is not really reliable since the areas mentioned in the assessment are usually substantially larger

than the areas actively used in the industry. Also, since it was a rough calculation, an error of 20-25 % is possible. For 1995 a check-up was partly made of the areas for the larger properties. For the rest a maximum acreage of 3 ha was set, except for the cemeteries where the stated area was accepted.

Education

The assumption was made that land use for education has not changed appreciably over the years and hence the data for 1990 was used for 1980.

3.3.3 Structures

Table 5. Land use for structures

Land Use	Area (1000 ha)			
	Initial stock 1980/81	Final stock 1995	Net change	Net change as % of initial stock
Structures	**284.9**	**329.8**	**44.9**	**15.8%**
Permanent road network	239.7	279.6	39.9	16.6%
Railroad network	37.0	36.2	-0.8	-2.2%
River or sea navigation	0.9	6.4	5.5	629.9%
Air transportation	7.4	7.7	0.3	4.4%

Source: SCB 1993 and SCB 1998

The area of land for structures includes land for roads, railroads, airports and ports, but not land for post and telecommunications or terminals, parking lots, cableways, etc.

In 1995 the area for permanent road network amounted to 280 000 ha, based on information from the National Road Administration, and there were 213 airports registered at the Board of Civil Aviation with a total area of 7 700 ha. The number of active ports and loading sites amounted in 1995 to about 140 with an area of 860 ha and additionally there are around 1 200 marinas and a few hundred fishing harbors. A rough estimate of the total area amounts to 5 000-6 000 ha. In 1980 there was no information about the area for marinas or fishing harbors, hence the large increase in area between the two years.

3.4 Recreational land

3.4.1 Sport and outdoor leisure activities: publicly/privately owned

Land for sport and outdoor leisure activities includes public baths, sports arenas, golf courses, slalom facilities and prepared exercise tracks. Recreation areas such as mountain tracks and forest land for picking mushrooms and berries are not included. But the right to public access provides a great deal of land for this purpose (see below).

The area for recreation amounted to about 49 000 ha in 1995 and information about land use for 1980 is derived from the increase in area between the two years. The area used for golf courses and slalom facilities increased by 18 000 ha between 1980 and 1995 and the increase for public baths was estimated at 1 000 ha. Since the total land area is known for 1995, the increase in land use between the two years was deducted from 1995.

The Right of Public Access

The Right of Public Access is unique and the most important base for recreation in Sweden and it provides a large amount of land for this purpose.

It gives the possibility for each and every person to visit somebody else's land, to take a bath in and to travel by boat on somebody else's waters. All are also allowed to pick wild flowers, mushrooms and berries and to put up a tent or park a caravan or trailer for twenty-four hours.

This land is not accounted for here, since it falls under all different categories of land, such as forestry land, agricultural land, protected land, etc. and is both privately and publicly owned.

3.5 Other land

3.5.1 Derelict land and dump sites

The area for derelict land and dump sites amounts to 5 500 ha in 1995 and has not increased significantly since 1980. This category comprises land use for sewage treatment works / purification plants and refuse dumps. The acreage for these areas is derived from the real estate assessment. The area was limited to a maximum of 5 ha for each tax unit.

3.5.2 Nature conservation or protection

Definition, data and data source

In the nature conservation and protection class the following four categories are included:

- National parks
- Nature reserves
- Nature management areas
- Wildlife sanctuaries

The data source for this class, called protected nature, is the nature conservation register managed by the Swedish Environment Protection Agency (SEPA). Statistics based on the register are compiled once a year by Statistics Sweden. The first year the statistics were produced was 1991. Some information had earlier been compiled by SEPA. This means that 1991 normally has to be used as the initial year for time series. Protected nature is divided in to several land cover classes in the register.

Comments

Some of the protected areas include water areas: both inland waters and seawaters are registered. Using total area, including water areas, could cause a problem in the context of land accounting when it comes to totals. To avoid this, a solution is to exclude all water areas in Eurostat tables 4 – 8.

Net change is the only area change feasible for reporting. Gross changes are very complicated to track. In such cases each protected area has to be monitored, which in theory is possible but in practice is very time consuming and therefore costly. In Eurostat table 4, the variables “increase”, “decrease”, “total change” and “unchanged area” are not possible to compile, since gross changes are unknown. The same is valid for the “change indicators “ section in the table, only data on the variable “net changes” is available.

Data compiled in Eurostat table 6 is based on nature types within protected areas. This indicates that the distribution into land use categories is an estimation. Nature types are more

connected to land cover than to land use. Defined nature types are deciduous forest; coniferous forest; mixed forest; mire; agricultural land; heaths, meadows and shrub land; substratum dominated land; other land; and water. “Water” is excluded here. The protection class “wildlife sanctuaries” is included in the land use category “other land”. It is not relevant to report land use in detail for this class since the protection is not for the land itself but for the existing wildlife.

In Eurostat table 8, nature land for conservation and protection is classified as the industry “nature” under the category “other”. The land use class “nature” is regarded as being equivalent to “other land” as in Eurostat table 6.

4. Land use and monetary values

4.1 Sources and methods

The estimates of land value are based on annual information given in the statistics of assessment of real estate and the corresponding statistics on real estate prices. General assessments (GA) have taken place 1981 and for different real estate categories in 1988, 1990, 1992 and 1994. For the intervening years Special Assessments (SA) have been made.

In the GA each real estate unit has been assessed and given a value corresponding to 75 percent of the market value observed for transactions of similar units. The values are subdivided so that land value is separated from the value relating to buildings and construction. Values in each GA corresponds to the price level two years before the assessment is made. Between two GA the price level is changed but for identical units the ratio between the new and the former values are calculated and averages over different real estate categories are included in the statistics. In the SA values are given for new units and units which have been subject to substantial change are revalued. The new values and revaluations are made in the same manner and using the same price level as for the latest GA. Thus, annual data in the same price level (constant prices) can be obtained.
The statistics on real estate prices uses information on all transactions of real estate units in different categories in relation to the assessed values in the currently available GA. This information has been used to calculate current market values.

The Assessments do not cover non-commercial buildings, most of which are in the government sector. For all units there exists information on the land areas in m^2. Therefore it has been possible to calculate m^2-prices for assessed units in various industries and impute these into the non-assessed land areas for the similar types of industries.

The sum of areas of assessed and non-assessed land should in principle be constant as sales between sectors cancel out, and by the same reason should the value at constant prices (same price level) also be constant. The latter has however had a tendency to increase over time. This phenomenon is caused by a shift of economic use from less valuable to more valuable land.
Increases of land values due to expenditures on improvements should in principle be excluded and recorded as fixed capital formation. This has not been possible in practice so the influence of such expenditures to at least some degree explains the increase in land value at constant prices.

4.2 Plans for the future

Since the end of 1995 no work has been done in this area at the National Accounts department. In the future the calculations will be revised according to the new international guidelines set out by SNA-93 and ESA-95. This work will hopefully begin in year 2004. This will form part of a larger revision of the National Wealth balances, which has begun in 2002 with the revision and updating of gross fixed capital stocks.

5. Regional and quality aspects

5.1 Introduction

Land is in general not a scarce resource in Sweden, but in densely populated areas or in areas of major importance for biodiversity or recreation there can be conflicts in land use.

In the suggested framework for land accounts there are at present no regional or qualitative aspects included. These aspects should be developed in supplementary tables.

Regional aspects can cover the whole country but with disaggregation to, for example NUTS or drainage areas, or they can cover specific areas where there can be a potential conflict on land use e.g. urban areas or coastal zones. Noise is a rising problem for population in built-up areas and areas undisturbed by noise will become more and more scare and further and further away from built-up areas. Polluted areas are an increasing problem and the cost for recovering such areas might be very high.

In this report we will give some examples of supplementary tables covering some of these aspects namely:

- Land use in urban areas
- Built-up areas in coastal zones
- Areas undisturbed by noise

5.2 Land use in urban areas

5.2.1 Background

In Sweden an urban area or locality is defined as a group of buildings normally not more than 200 metres apart from each other and must fulfil a criterion of having at least 200 inhabitants. Delimitation of localities is made every fifth year. In 2000 there were 1 936 localities in Sweden. The localities cover only 1.3 per cent of the total land area but 84 per cent of the population lives in localities / urban areas.

Delimitation of localities or urban areas is part of the Land Use Statistics at Statistics Sweden. Delimitation is also made for other built-up areas such as smaller localities (50-199 inhabitants) in rural areas and concentrations of weekends and holiday houses. A pilot study has also been carried out to elaborate methods to delimit major areas with workplaces outside localities.

Statistics Sweden has been in charge of the delimitation of localities since 1960. From 1980, land use within urban areas has been examined. The delimitation concerning the year 2000 has recently been completed and a survey has just started to estimate land uses and changes of land use in urban areas. At present the latest data for land use in urban areas concerns 1995.

5.2.2 Survey method

The changes in land use in urban areas between 1980-1990 and 1990-1995 have been examined in a random sample of 60 urban areas by studying aerial photographs and economic maps mostly in the scale 1:10 000. The area in the 60 urban settlements represents 24 per cent of the total urban settlement area in Sweden. About 40 per cent of the population lives in the examined urban settlements.

Table 6. Sample size distribution by size class of the localities

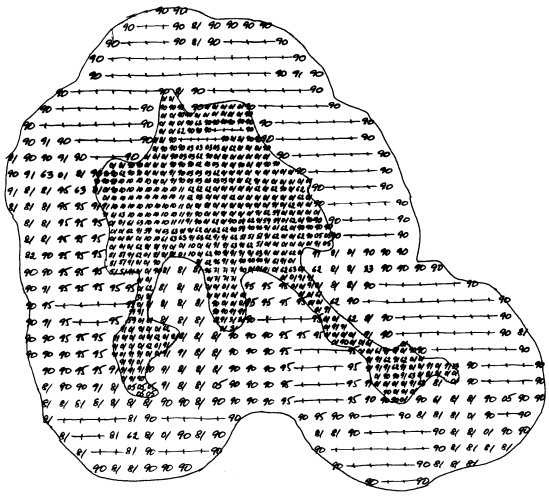
	1980-1990				1990-1995			
	Localities< 10 000 inhabitants	Localities > 10 000 inhabitants excl. big cities	Big cities	Total	Localities< 10 000 inhabitants	Localities > 10 000 inhabitants excl. big cities	Big cities	Total
Number of localities in the sample	35	22	3	60	35	22	3	60
Total number of localities	1710	107	3	1820	1829	106	3	1938
Sample area as % of total urban area	4	28	100	25	4	30	100	24

Source: SCB 1980-1990 and SCB 1990-1995

Land use in the sample of urban areas was estimated by point interpretation of aerial photographs using map information to confirm the interpretations. The real distance between the interpretation points was 50, 100 or 200 metres depending on the size of the urban settlement. The interpretation was carried out on black and white aerial photos with an overlay of a transparent film with a 1 cm grid raster. The border of the locality was transferred to the film. Type of land use was marked directly on the film by a combination of figures. The information on the film was then transferred to database. In total 70 600 points were interpreted in urban settlements.

On the basis of the results from the 60 urban areas, corresponding figures for all urban areas in Sweden have been calculated.

Figure 1. Example of interpretation of aerial photos of land use in urban areas



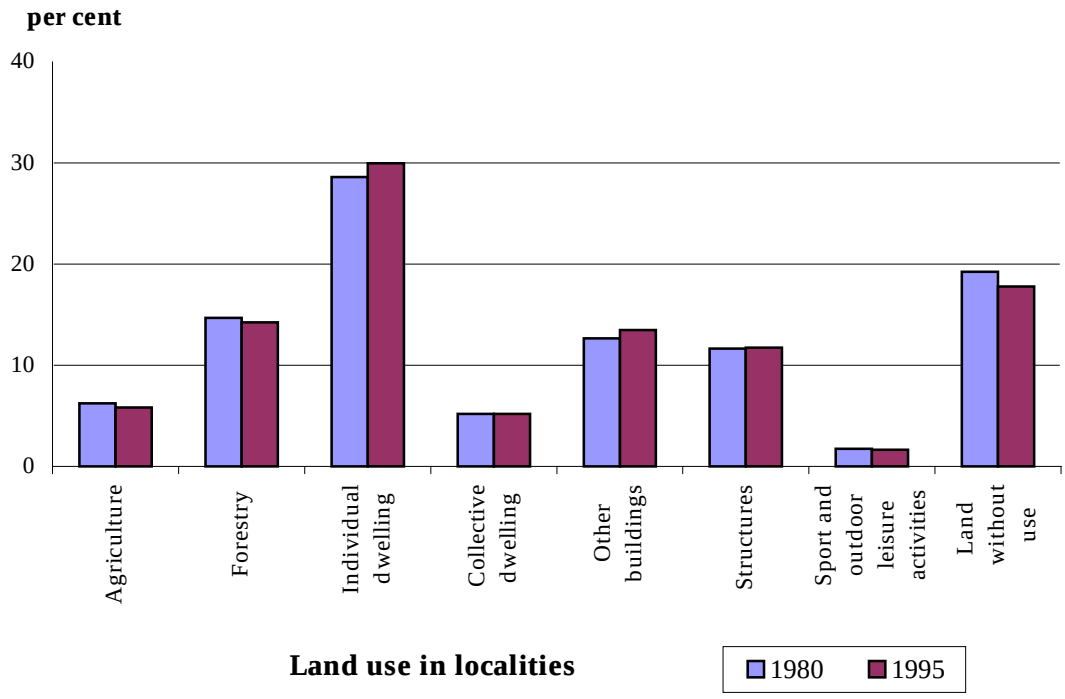
Source: SCB 1980-1990 and SCB 1990-1995

The study of changes was directed towards changes inside the locality and changes in the surroundings of the localities (the expansion area). In the study of changes, information from new aerial photos is used together with supplementary information from the central property register and maps.

5.2.3 Results

The total area of localities amounted to 482 200 hectares in 1980 or 1.2 per cent of the total land area. In 1995 the total land area in localities had increased by 8 per cent to 522 550 hectares or to 1.3 per cent of total land area. Of the total increase, 33 700 hectare was due to expansion of urban areas and 6 800 hectare was the net change of new localities and localities that have ceased to exist during the period. Diagram 3.1 shows the main land use categories of localities in 1980 and 1995.

Figure 2. Land use in localities 1980 and 1995, per cent



Source: SCB 1980-1990 and SCB 1990-1995

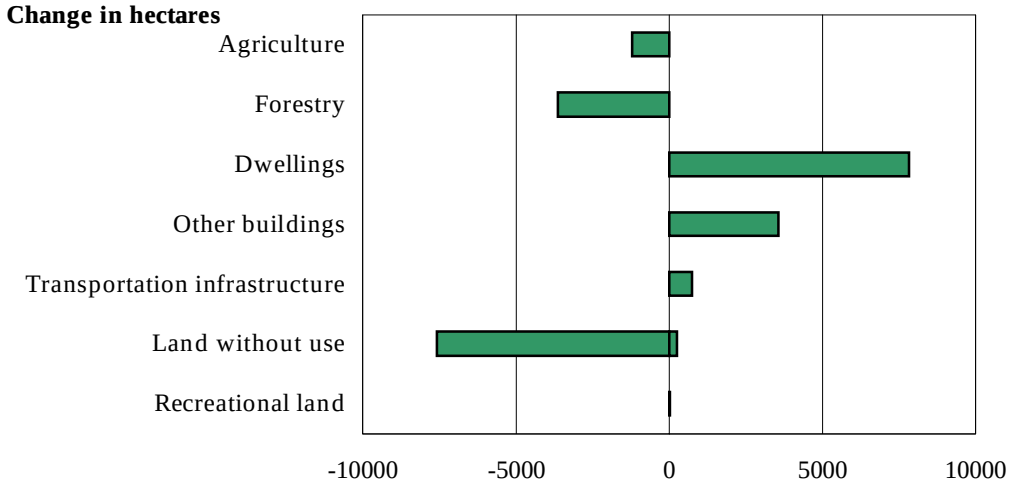
The main categories are individual dwellings. Built-up areas amount to more than 60 per cent in 1995. There has been an increase in the areas used for individual dwellings as well as areas used for other buildings while green areas; such as forests including public parks have decreased, as has land without use.

Changes in land use can depend on expansion of the locality where new built-up areas will be incorporated in the locality, or changes within a locality. In general, both of these categories are applicable for each locality.

Changes within the localities

The first part of supplementary table 5 shows the change within existing localities. The total change amounted to almost 3 per cent. With the method used, it is not possible to trace changes within the built-up areas, e.g. from dwellings to commercial activities. But the method used gives good information on the transformation of non-built-up land to built-up land of different categories. The main changes within urban areas are an increase for dwellings and a decrease in land without use and for forestry.

Figure 3. Change in land use within localities

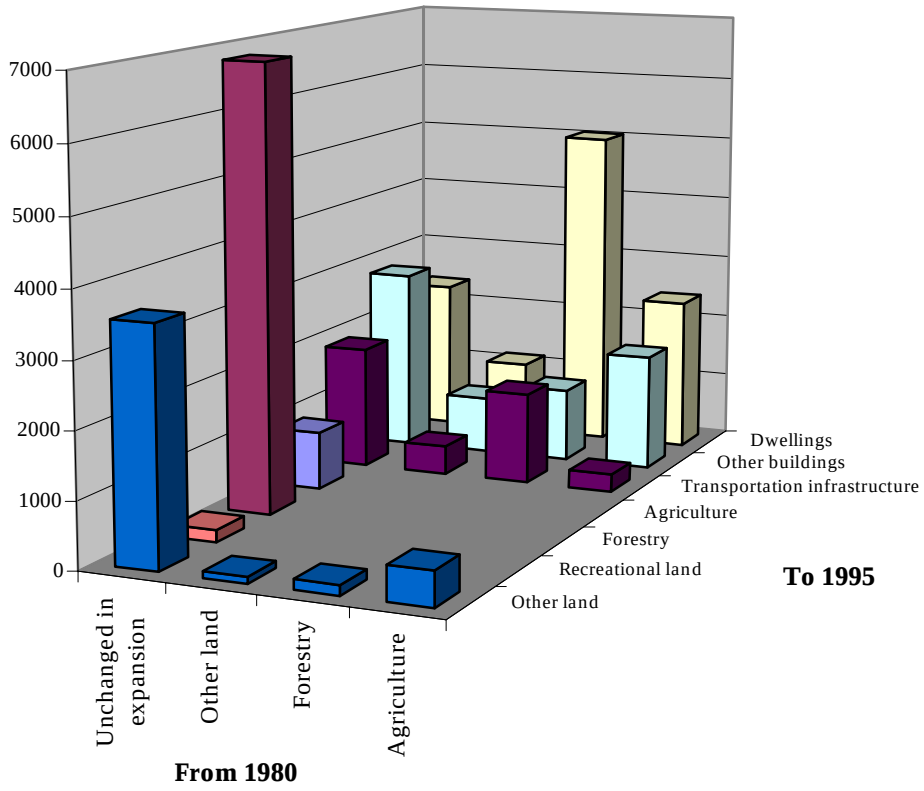


Source: SCB 1980-1990 and SCB 1990-1995

Expansion

The second part of supplementary table 6 shows the expansion of localities. Between 1980 and 1995, the total expansion amounted to almost 7 per cent. Expansion of localities can come from e.g. new built areas incorporated in the locality or merging of localities close to each other because of new built areas in between. Figure 4 shows change in land use for areas incorporated in the localities. The main changes were from forest to dwellings and from agriculture to dwellings.

Figure 4. Expansion of localities, change in land use for land incorporated in the localities 1980-1995



Source: SCB 1980-1990 and SCB 1990-1995

Total change in land use in localities

The total change in land use in localities consists of changes within existing localities, expansion of existing localities and the net change caused by addition of new localities and localities that ceased to exist due to diminishing population.

Table 7. Total change in land use in urban areas

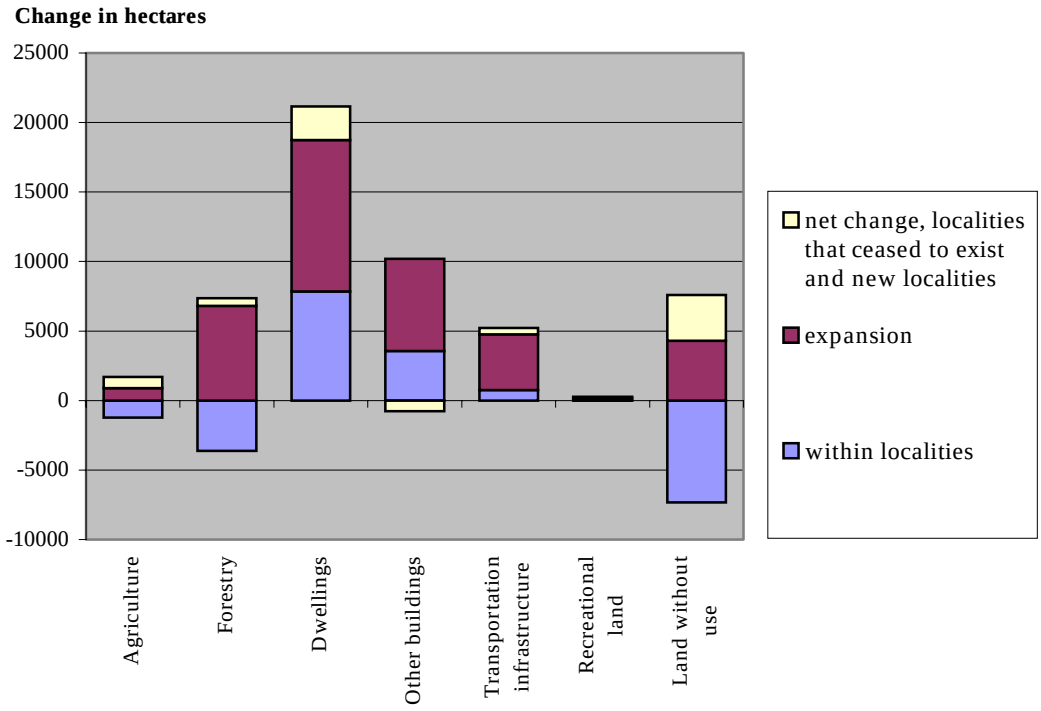
	Total land area		Change			
Land use	**1980**	**1995**	Change	Thereof within localities	Expansion	Net change, new localities and localities that ceased to exist
Agriculture	30 020	30 500	480	-1 220	890	810
Forestry	70 710	74 450	3 740	-3 630	6 810	560
Dwellings	163 000	184 150	21 150	7 840	10 890	2 420
Other buildings	61 080	70 500	9 420	3 560	6 635	-775
Transportation infrastructure	56 170	61 400	5 230	750	4 010	470
Recreational land	8 340	8 600	260	30	180	50
Land without use	92 680	92 950	270	-7 330	4 300	3 300
Total	**482 200**	**522 550**	**40 550**	**0**	**33 715**	**6 835**

Source: SCB 1980-1990 and SCB 1990-1995

Even if the agricultural, forest land and land without use (non-built-up areas) have decreased in existing localities, there is a net change due to an increase by expansion and net change of new and exlocalities. More than 50 per cent of the increase in area used for dwelling is caused by expansion.

This can be further analysed in the future by taking into account different types of localities, for example metropolitan areas or smaller localities. Another interesting analysis will be population density in different types of localities, and access to green areas. However these analyses are not within the boundaries of this project.

Figure 5. Changes in land use in localities by type of change



5.3 Built-up land in coastal areas

5.3.1 Background

Costal areas are very valuable in many ways, e.g. for recreation, flora and fauna. In order to protect the Swedish coastal zones as well as zones around inland water, a new regulation for protection of these areas was adopted in 1975. This regulation includes a general prohibition to build within 100 metres from the shorelines. The county council can extend the zone to 300 metres. The objective of the regulation is to save public access to shores and preserve good conditions for wildlife.

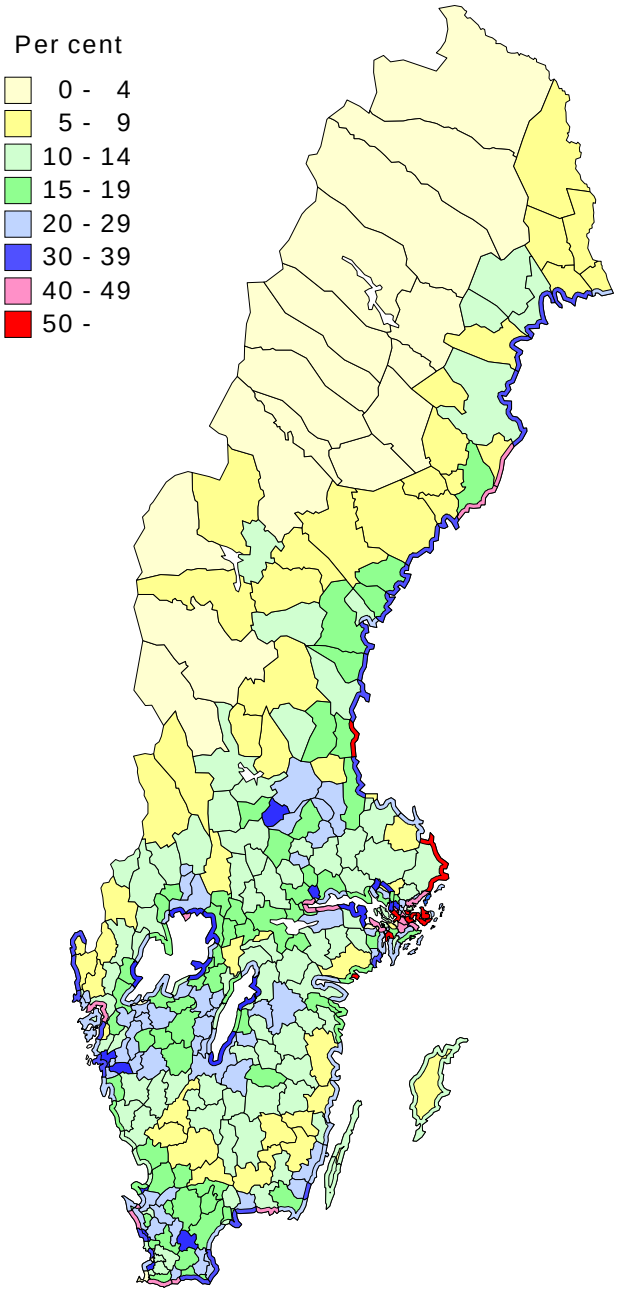
Digital maps together with the central property register and the central building register provides an opportunity to study the development of building along all shores in Sweden. The following presents some results from a study on coastal areas in Sweden and provides an example for analysing human intervention in valuable areas by land use such as private dwellings, holiday homes and industrial activities.

5.3.2 Some results

The Swedish coastline including the coast around the two big islands Gotland and Öland is 12 800 kilometres, measured using the scale 1:10 000. About 30 per cent is affected by buildings within 100 metres from the coastline. Municipalities with more than 50 per cent of the coastline affected by buildings within 100 metres, are mainly in the metropolitan areas of Stockholm. Relatively high values can also be found in other parts of southern Sweden and some municipalities in northern Sweden. Map 1 shows the percentage of the coastline and shores of inland water with buildings less than 100 metres.

The percentage of the affected coastline is calculated by GIS technique using buffers. A buffer with the radius of 100 meter was created for each building. If the buffer intersected with the coastline, the part of the coastline inside the buffer was considered as affected by buildings.

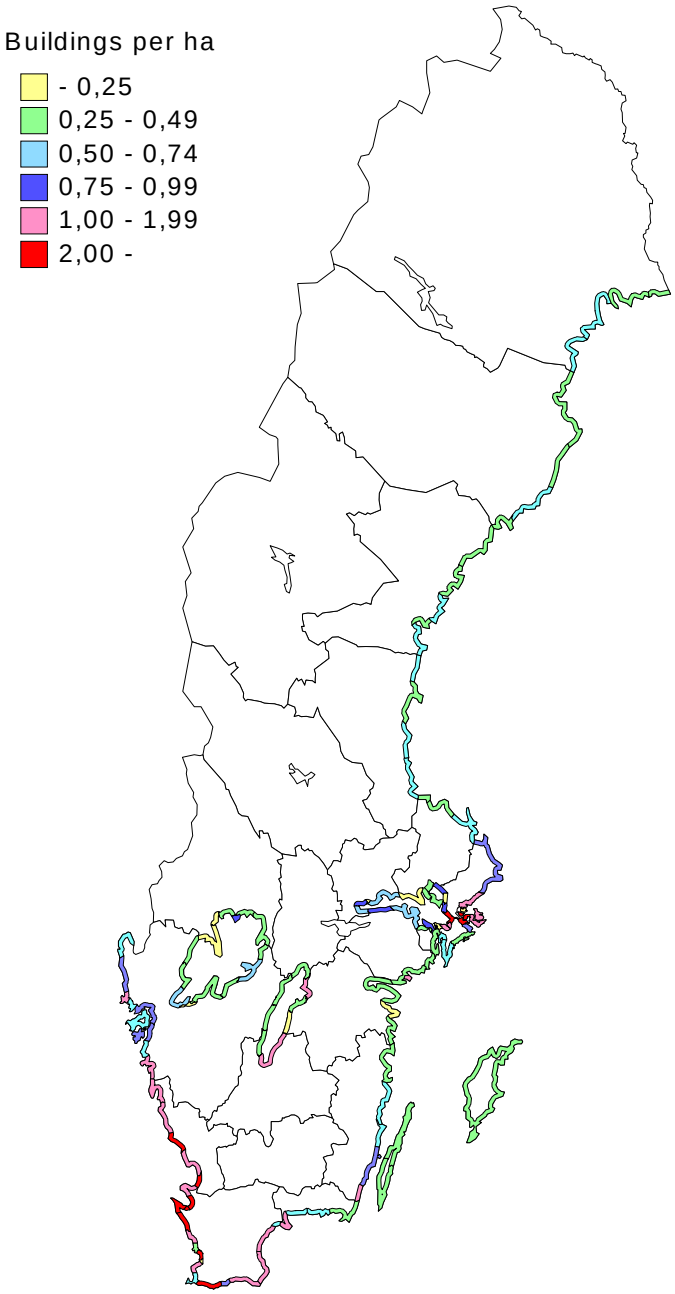
Figure 6. Coastal and shores of inland waters affected by buildings within 100 metres by municipality.



Source: Regional planning and Natural Resources, Statistics Sweden

There are a total of 340 000 hectares within 300 metres of the coastline, including Gotland, Öland and the three biggest lakes are. There are about 226 000 buildings on this areas, which amounts to an average of 0.7 buildings per hectare.

Figure 7. Number of buildings per hectare within 300 metres from the coast and the three biggest lakes by municipality.



Source: Regional planning and Natural Resources, Statistics Sweden

In the building register there is information on the main use of the building and the information derives from the assessment of real estate.

Table 8. Main use of buildings within 300 metres of the coastline, including Gotland, Öland and the three biggest lakes

		Number of buildings	Per cent
Agriculture	1	5 817	3
One family dwellings	2	80 647	36
Collective dwellings	4	12 632	6
Holiday homes	3	87 953	39
Industries	5	4 539	2
Other buildings	6	5 333	2
Unknown	0	29 161	13
		226 082	100

Source: Regional planning and Natural Resources, Statistics Sweden

Of the total number of houses, 42 per cent is used for private dwellings and 39 per cent for holiday homes. This table can be seen as a first indicator of the main use of buildings situated within 300 metres of the coastline. Each building is represented by one point. Since the ground area of each building can differ among different types of use, the statistics need to be further developed by linking information on ground area to each building to get a better estimate on land use in coastal areas.

5.4 Areas undisturbed by noise

Silent areas or areas not disturbed by noise are diminishing resources in industrialised society. The more noise is introduced in the environment, the more valuable is an undisturbed piece of land. Such an area shows an important quality aspect of the land and can well motivate its place in the context of land accounts. It should be possible to estimate economical values of silent areas. An example of such a method is given below.

5.4.1 Methodology

Areas to be counted are situated outside urban areas. The chosen methodology to demarcate areas not disturbed by noise is based on:

- Knowledge of sources of noise
- Distance (area) affected by noise source
- Position (coordinates) of noise sources
- Digitised map (land use, urban areas)
- Software

5.4.2 Sources of noise

The following sources of noise are dealt with in this report:

- Roads
- Railways
- Airports

5.4.3 Areas affected by noise outside urban areas

Noise zones in metres on each side of the source:

- Roads with > 5000 vehicles per day (annual average) 500
- Roads with 1000 – 5000 vehicles per day (annual average) 250
- Railways 200
- Provincial airports 2000
- International airports (according to the National Aviation Authority)

5.4.4 Testing of the method

The testing was restricted to roads as the source of noise because of the limited time available. The road network with data on traffic intensity in a digitised form was delivered by the Swedish national road administration. Two counties were chosen for the testing, Skåne and Gotland. Skåne is one of the most populous counties in Sweden with heavy traffic, both regional and inter-regional. Gotland is the opposite, mostly rural with no transit traffic.

For roads used by more than 5000 vehicles a day, a buffer of 500 metres was demarcated. For roads used by 1000 to 5000 vehicles a day, a buffer of 250 metres was demarcated.
The areas covered by the buffers were calculated and were considered as areas disturbed by road traffic noise.

5.4.5 Results of the testing

The maps presented below show the noise-disturbed buffer zones of the two counties. Areas outside the buffer zones are considered as silent. This is however only true if we limit the sources of noise to road traffic.

Figure 8. Areas disturbed by road traffic noise in Skåne county

Source: Swedish National Road Administration (SNRA), processed by SCB

Figure 9. Areas disturbed by road traffic noise in Gotland county

Source: Swedish National Road Administration (SNRA), processed by SCB

The results in figures (see table 8 below) show a considerable difference between the two counties in areas disturbed by road traffic noise.

Table 9. Areas disturbed by road noise, km²

County	Minor roads	Major roads	Total roads	Total area	Per cent disturbed
	1000-5000	>5000			
Gotland	134,8	10,1	144,9	3140	4,6
Skåne	923,3	661,9	1585,2	11027	14,4

Source: Swedish National Road Administration (SNRA), processed by SCB

In rural Gotland only about 5 % of the area outside urban agglomerations is disturbed by noise while in Skåne about a three times larger area is disturbed.
It would have been interesting to investigate how many people are affected by the road noise by combining the buffer layers with the layer of the resident population (by data from the real properties register). However, such an operation was not possible due to the time allocated for this action.

6. Further development of land accounts

6.1 Data sources

At the moment, there are problems classifying land use according to the NACE-classification. Many different data sources are used for compiling land use statistics and there is no possibility to connect the real estate listing with the central enterprise and work place register at Statistics Sweden. There is however a proposal to start a project in the fall of 2002, which will enable this connection to be made in the future.

Furthermore, the Corine Land Cover data will not be available before 2003.

This study is a first attempt to coordinate all different data sources for land use and land cover aiming at compiling land accounting for Sweden. The study will provide information on which parts need further development and what additional work will be needed in the future.

6.2 Contaminated areas and areas in need of sanitation

Presently there is an inventory of polluted areas taking place in each county in Sweden. The county administrative boards in Sweden carry out all the work. They use the same model, which is prepared by the Swedish Environmental Protection Agency. Currently they have identified about 22 000 polluted areas and have estimated the total number of polluted areas at 38 000. All counties are supposed to finalise the work in 2005 at the latest.

All polluted areas are to be classified from 1 to 4, where group 1 is the most polluted. Areas classified as 1 or 2 are to be decontaminated, while the location of areas classified as 3 or 4 are only noted.

Around 4 200 of the 22 000 identified areas are currently classified. These are thought to be the most polluted areas in Sweden. Approximately 6 000 of the identified areas are former polluted gas stations.

The county administrative boards are building a database with all this information. Unfortunately, the size of these areas will not be reported and consequently no information will be available of polluted areas in Sweden in the future.

6.3 Multiple use

A lot of land in Sweden has multiple uses, and not only according to one NACE-group at a time. For instance, forest land is not only used for forestry but also for outdoor life as hunting, camping and picking mushrooms and for reindeer breeding. This is also true for protected land.

The Right of Public Access is, as mentioned before, the most important base for recreation in Sweden and it provides a large amount of land for this purpose. This land is to a large extent included in forestry and protected land in the land use tables, as is land for reindeer breeding.

Nowadays all reindeer in Sweden are herded by the Sami people, which are allowed to use 15.7 million hectares of land for reindeer breeding. This corresponds to approximately one

third of the total area for Sweden and includes practically the entire mountain range. Around 10 millions of hectares of land are allowed for reindeer breeding all year around and approximately 5.7 millions of hectares are just for wintertime.

Within this area, the Sami people are allowed to let their reindeer graze on both Crown land and private property and they are allowed to construct buildings they need for reindeer breeding They may also cut down wood for household requirements and hunt and fish in most of the area.

As long as the reindeer breeding is not managed too intensely, it is considered to favour the biodiversity and productivity of the mountain vegetation, as the mountain character is affected and formed by reindeer breeding since many years back. Problems such as over grazing and wear have however been noticed in the past years, in areas with a large amount of reindeers. Besides reindeer, cross-country vehicles and tourists contribute to the wear of the vegetation in the mountains.

Multiple land use will also occur in a different situation, e.g. when one building is used for both housing and several economic activities. Linking the register of workplaces with the real property register and the population register demands the development of methods to allocate ground areas to these multiple uses.

6.4 Access to green areas and areas undisturbed by noise

In Sweden access to green areas is one of the Swedish environmental quality objectives A well built environment. Landcover/land use statistics combined with information on population will make it possible to calculate indicators showing access to green areas or areas undisturbed by noise. Statistics Sweden is at present planning to develop methods and produce several indicators related to a good built-up environment.

7. References

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- SCB 1983. Land use in Sweden. Statistics Sweden 1984. (Markanvändningen i Sverige,)
- SCB 1998. Land use in Sweden, third edition. Statistics Sweden 1998. (Markanvändningen i Sverige, tredje utgåvan)
- SCB 1980-1990. Land use in urban areas 1990 and changes between 1980-1990. Statistics Sweden 1992.
- SCB 1990-1995. Land use in urban areas 1995 and changes between 1990-1995. Statistics Sweden 1997.
- Regional planning and Natural Resources, Statistics Sweden 2002.

Main data sources in Sweden

- Banverket (National agency for the railroad network)
- National Statistics Office
  - The statistical yearbook of agriculture
  - Land use in urban areas and changes of land use in urban areas
  - Real estates in Sweden
  - The agricultural business register
  - Census of population and housing
  - Building tax register (FASTPAK)
  - Statistics Sweden's harbour records
  - Statistics Sweden's peat survey
- National forest inventory; Swedish University of Agricultural Sciences
- SCB 1992
- Swedish Environmental Protection Agency
- Swedish National Road Administration (SNRA)
- Swedish institute for transport and communications analysis (SIKA)
- Swedish national atlas
- Swedish Association of Local Authorities
- Swedish golf association
- The statistical yearbook of Forestry; National Board of Forestry

Appendix 1: Tables proposed by Eurostat

Table EU1. Land cover stock and changes - summary (1000 ha)

	Area (1000 ha)			Change Indicators
Land Cover	**Initial stock 1980**	**Final stock 1995**	Net change	Net change as % of the initial stock
1. Artificial surfaces	**1 089**	**1 121**	**32**	**3.0%**
1.1. Urban fabric	278	373	95	34.0%
1.2. Industrial, commercial and transport	573	475	-98	-17.2%
1.3. Mine, dump and construction sites	28	35	7	25.0%
1.4. Green urban areas, sport, leisure, etc.	210	239	29	13.8%
2. Agricultural land	**3 696**	**3 285**	**-411**	**-11.1%**
2.1. Arable land	3 000	2 693	-307	-10.2%
2.2. Permanent crops	8	21	13	162.5%
2.3. Pastures	584	425	-159	-27.2%
2.4. Heterogeneous agriculture areas	105	145	40	38.1%
3. Forests and semi-natural areas	**33 295**	**34 163**	**868**	**2.6%**
3.1. Forests	24 413	27 264	2 851	11.7%
3.2. Shrub and herbaceous vegetation	3 000	2 995	-5	-0.2%
3.3. Open spaces with little or no vegetation	5 882	3 904	-1 978	-33.6%
4. Wetlands	**2 440**	**3 600**	**1 160**	**47.5%**
4.1. Inland wetlands	2 440	3 600	1 160	47.5%
4.2. Coastal wetlands	..			
5. Water bodies	**3 900**	**3 900**	**0**	**0.0%**
5.1. Inland waters	3 900	3 900	0	0.0%
5.2. Marine waters, incl. lagoons & estuaries				
Total	**44 420**	**46 069**	**1 649**	**3.7 %**

Table EU4. Land use stock and changes - summary (1000 ha)

Land Use		Area (1000 ha)			Change indicators
		Initial stock 1980/81	**Final stock 1995**	Net change	Net change as % of initial stock
Under Cultivation	**Agriculture**	**3 585**	**3 564**	**-21**	**-0.6 %**
	Growing of crops	3 000	2 988	-13	-0.4%
	Growing of fruit and vegetables		0	0	
	Farming of animals	584	576	-9	-1.5%
	Forestry	**23 501**	**22 634**	**-868**	**-3.7 %**
	Fish production	..	..	..	..
	Other	..	..	..	..
Built-up land	**Dwellings**	**502**	**563**	**61**	**12.1 %**
	Individual dwelling	475	530	55	11.5%
	Collective dwelling	27	33	6	22.3%
	Other buildings	**228**	**243**	**15**	**6.6 %**
	Agriculture	58	61	4	6.3%
	Mining	28	16	-12	-42.1%
	Manufacturing	76	77	1	0.8%
	Energy	6	22	16	254.0%
	Commercial land	17	18	1	5.6%
	Education and research	12	12	-1	-4.2%
	Social and health services	31	26	-5	-16.6%
	Non-defined buildings		11	11	
	Structures	**285**	**330**	**45**	**15.8 %**
	Permanent road network	240	280	40	16.6%
	Railroad network	37	36	-1	-2.2%
	River or sea navigation	1	6	5	629.9%
	Air transportation	7	8	0	4.4%
	Undeveloped sites	**72**		**-72**	**-100.0 %**
Recreational land	**Sport and outdoor leisure activities**	**30**	**49**	**19**	**64.3%**
	Publicly owned				
	Privately owned				
Other land	**Derelict land and dump sites**	**4**	**6**	**2**	**37.5 %**
	Nature conservation or protection	**1 822**	**2 842**	**1 019**	**55.9 %**
	Land without use				
Total		**41 161**	**41.093**		

Table EU5. Land use - monetary value (SEK million), fixed prices

		Opening balance sheets 1981	Closing balance sheets 1995	Net change	Net change of % of initial stock
Under cultivation	**Agriculture**	**32 216**	**32 720**	**504**	**1.6%**
	Growing of crops				
	Growing of vegetables and fruit				
	Farming of animals				
	Forestry	**89 508**	**88 625**	**-883**	**-1.0%**
	Fish production				
	Other				
Built-up land	**Dwellings**	**299 183**	**354 423**	**55 240**	**18.5%**
	Individual dwellings	225 810	250 273	24 463	10.8%
	Collective dwellings	73 372	104 150	30 778	41.9%
	Other buildings	**316 641**	**359 168**	**42 527**	**13.4%**
	Agriculture			0	
	Mining	1 212	1 664	452	37.3%
	Commercial land	19 241	30 787	11 546	60.0%
	Industrial land (Manufacturing)	64 275	59 162	-5 113	-8.0%
	Energy	34 756	41 489	6 733	19.4%
	Private and public land	72 717	71 835	-882	-1.2%
	Culture	24 151	26 082	1 931	8.0%
	Education and research	66 377	89 006	22 629	34.1%
	Social and health services	29 575	29 811	236	0.8%
	Military	4 337	9 332	4 995	115.2%
	Structures	**23 340**	**29 670**	**6 330**	**27.1%**
	Permanent road network	12 362	16 989	4 627	37.4%
	Railroad network				
	River or sea navigation				
	Air transportation				
	Other networks				
	Other structures	10 978	12 681	1 703	15.5%
Recreational land	**Sport and outdoor leisure activities**	**2 969**	**6 135**	**3 166**	**106.6%**
	Publicly owned				
	Privately owned				
Other land	**Derelict land and dump sites**				
	Nature conservation or protection				
	Land without use				
Total economic land		**763 857**	**870 741**	**106 884**	**14.0%**

Table EU6. Land use, detailed changes (1000 ha)

Land Use (initial year)	Land use (final year)																	Total (initial year)	Decrease
	Under cultivation	Agriculture	Growing of crops, vegetables, fruits	Farming of animals	Forestry	Other	**Built-up land**	Dwellings	Other buildings	Structures	Transportation infrastructure	Other structures	**Recreational land**	**Other land**	Derelict land and dump sites	Nature conservation or protection	Land without use		
Under cultivation																133		**1 123**	133
Agriculture																2		**27**	2
Growing of crops, vegetables, fruits																			
Farming of animals																			
Forestry																131		**1 096**	131
Other																			
Built-up land																			
Dwellings																			
Other buildings																			
Structures																			
Transportation infrastructure																			
Other structures																			
Recreational land																			
Other land																115		**1 471**	115
Derelict land and dump sites																			
Land for nature conservation or protection	133	2			131									115				**2 594**	
Land without use																			
Total (Final year)	**1 256**	**29**			**1 227**									**1 586**		**2 842**			
Increase	133	2			131									115		248			

Changes in use account

Net changes (1000 ha)																248			
Net change as % of initial stock																9,6			
Total changes (1000 ha)																			
Total change as % of initial stock																			

Table EU8a. Land use by industries, area (1000 ha)

	Land Use 1980										
	Under cultivation			Built-up land			Recreational land	Other land			
"Industries"	Agriculture	Forestry	Other	Dwellings	Other buildings	Structures		Dump sites	Nature	No use	Total
Consumers	**0**	**0**	**0**	**0**	**11**	**19**	**0**	**0**	**0**	**0**	**30**
Recreational					11	19					30
Traffic											0
Industries	**3 585**	**23 501**	**0**	**548**	**228**	**345**	**0**	**0**	**0**	**0**	**28 206**
Agriculture	3 585			46	58						3 688
Kitchen gardens											0
Forestry		23 501				60					23 561
Mining					28						28
Manufacturing					76						76
Electricity, gas					6						6
Construction											0
Wholesale					17						17
Hotels											0
Transport						285					285
Financial											0
Real estate											502
Housing				502							0
own account											0
rented											0
Public adm.					31						31
Education					12						12
Health											0
Other											0
Other	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1 822**	**0**	**1 822**
Nature									1 822		1 822
No use											0
Total	**3 585**	**23 501**	**0**	**548**	**239**	**364**	**0**	**0**	**1 822**	**0**	**30 059**

	Land Use 1995											Changes by industry	
	Under cultivation			Built-up land			Recreational land	Other land					
"Industries"	Agriculture	Forestry	Other	Dwellings	Other buildings	Structures		Dump sites	Nature	No use		Net change	Net change as a % of initial stock
Consumers	**0**	**0**	**0**	**0**	**12**	**37**	**0**	**0**	**0**	**0**	**49**	**19**	**62,7 %**
Recreational					12	37					49	19	62,7%
Traffic													
Industries	**3 563**	**22 634**	**0**	**636**	**243**	**415**	**0**	**0**	**0**	**0**	**27 491**	**-715**	**-2,5 %**
Agriculture	3 563			74	61						3 698	10	0,3%
Kitchen gardens													
Forestry		22 634				86					22 719	-842	-3,6%
Mining					16						16	-12	-42,1%
Manufacturing					77						77	1	0,8%
Electricity, gas					22						22	16	254,0%
Construction													
Wholesale					18						18	1	5,6%
Hotels													
Transport						330					330	45	15,8%
Financial													
Real estate											563	61	12,1%
Housing				563									
own account													
rented													
Public adm.					18						18	-13	-42,7%
Education					12						12	-1	-4,2%
Health					8						8	8	
Other					11						11	11	
Other	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2 842**	**0**	**2 842**	**1 019**	**55,9 %**
Nature									2 842		2 842	1 019	55,9%
No use													
Total	**3 563**	**22 634**	**0**	**636**	**255**	**452**	**0**	**0**	**2 842**	**0**	**30 382**	**323**	**1,1 %**

Appendix 2: Tables with regional or qualitative aspects

Table R1. Land use in localities 1980-1995, hectares

	1980	1990	1995	1980-1995	Net change as % of initial stock
Residential area	**163 000**	**173 800**	**184 150**	**21 150**	**13,0**
Detached house, linked building, terrace-house or houses for seasonal and secondary use, farm buildings	137 940	147 800	156 600	18 660	13,5
Multi-dwelling buildings including mixed residential / other use	24 160	25 300	27 150	2 990	12,4
Other for example dwellings under construction	(890)	..	..		
Commercial land, industrial land and land used for technical installations	**50 710**	**55 400**	**59 400**	**8 690**	**17,1**
of which land not used at the moment	12 850	13 050	12 800	-50	-0,4
Land used for public services and facilities	**23 220**	**23 600**	**23 900**	**680**	**2,9**
School	7 640	7 900	8 000	360	4,7
Day nursery, leisure homes etc	1 040	1 050	1 100	60	5,8
Hospitals	3 230	3 250	3 300	70	2,2
Pensioners' homes and the like	790	800	800	10	1,3
Buildings with cultural value, museum, old home-stead museum	740	750	800	60	8,1
Church, cementery	3 620	3 700	3 750	130	3,6
Military premises and training field	2 930	2 900	2 850	-80	-2,7
Other for example local administration, post-office call office	3 230	3 200	3 300	70	2,2
Land used for transport and communication facilities	**56 170**	**59 850**	**61 400**	**5 230**	**9,3**
National main road or country road	3 770	3 950	4 150	380	10,1
Other road or street	42 180	44 800	46 000	3 820	9,1
Railway	5 660	5 650	5 800	140	2,5
Trading harbour	2 780	3 150	3 300	520	18,7
Harbour for small boats	1 040	1 050	1 050	10	1,0
Airport	600	1 050	1 000	400	66,7
Other for example communication facilities under construction	150	..	..		0,0
Land used for recreation facilities and the like	**8 340**	**8 450**	**8 600**	**260**	**3,1**
Sportfield, public baths, miniature golf-course, golf course	6 700	6 750	6 850	150	2,2
Trotting track, motor track, shooting-range	940	950	1 000	60	6,4
Other for example people's park	(690)	(600)	(800)		0,0
Agricultural land	**30 020**	**30 200**	**30 500**	**480**	**1,6**
Arable land and pasture	27 740	27 950	28 200	460	1,7
Greenhouses, market garden and allotment garden	2 280	2 150	2 250	-30	-1,3
Forest and other wooded land, public park	**70 710**	**74 050**	**74 450**	**3 740**	**5,3**
Open land such as bare rocks and grassland not used for any special purpose	**78 890**	**79 150**	**79 050**	**160**	**0,2**
Land not possible to classify	**940**	**1 100**	**1 100**	**160**	**17,0**
Total land area	**482 200**	**505 460**	**522 550**	**40 350**	**8,4**

Table R2. Land use in localities, detailed changes in hectares

Land Use 1980 (initial year)	Land use 1995 (final year)																	Total 1980	Decrease within localities
	Under cultivation	Agriculture	Growing of crops, vegetables, fruits	Farming of animals	Forestry	Other	**Built-up land**	Dwellings	Other buildings	Structures	Transportation infrastructure	Other structures	**Recreational land**	**Other land**	Derelict land and dump sites	Nature conservation or protection	Land without use		
Changes within localities																			
Under cultivation							**4 780**	**3390**	**1020**		**370**			**70**			**70**	**100730**	**4850**
Agriculture							1170	690	410		70			50			50	30020	1220
Growing of crops, vegetables, fruits																			
Farming of animals																			
Forestry							3610	2700	610		300			20			20	70710	3630
Other																			
Built-up land																		**280250**	
Dwellings																		163000	
Other buildings																		61080	
Structures																			
Transportation , infrastructure																		56170	
Other structures																			
Recreational land																		**8340**	
Other land							**7370**	**4450**	**2540**		**380**		**30**	**180**			**180**	**92680**	**7580**
Derelict land and dump sites																			
Land for nature conservation or protection																			
Land without use							7370	4450	2540		380		30	180			180	92680	7580
Increase within localities							**12150**	**7840**	**3560**		**750**		**30**	**250**			**250**		**12430**
Expansion of localities																			
Under cultivation							**12040**	**7420**	**2940**		**1680**			**670**			**670**		
Agriculture							4460	2390	1800		270			520			520		
Forestry							7580	5030	1140		1140			150			150		
Other land							**2440**	**1120**	**880**		**440**			**100**			**100**		
Unchanged in expansion	**7700**	**890**			**6810**		**7055**	**2350**	**2815**		**1890**		**180**	**3530**			**3530**		
Total expansion	**7700**	**890**			**6810**		**21535**	**10890**	**6635**		**4010**		**180**	**4300**			**4300**		
Total, Final year, 1995	**104950**	**30500**			**74450**		**316050**	**184150**	**70500**		**61400**		**8600**	**92500**			**92950**		
Total, Initial year 1980	**100730**	**30020**			**70710**		**280250**	**163000**	**61080**		**56170**		**8340**	**92680**			**92680**		
Total change	**4220**	**480**			**3740**		**35800**	**21150**	**9420**		**5230**		**260**	**270**			**270**		
Thereof																			
- Change within localities	-4850	-1220			-3630		12150	7840	3560		750		30	-7330			-7330		
- Expansion	7700	890			6810		21535	10890	6635		4010		180	4300			4300		
Net change new localities, exlocalities	1370	810			560		2115	2420	-775		470		50	3300			3300		

Table R3. Areas disturbed by road noise, km^2

County	Minor roads	Major roads	Total roads	Total area	Per cent disturbed
	1000-5000	>5000			
Gotland	134,8	10,1	144,9	3140	4,6
Skåne	923,3	661,9	1585,2	11027	14,4

Appendix 3: Type codes of real estates

Type codes at real-estate assessment as from year 2000

Units	Code
Agricultural units	100-199
Individual dwelling	200-299
Collective dwelling	300-399
Industry	400-499
Mining	600-699
Energy	700-799
Special units	800-890
Other units	900-999