

Statistical-geospatial integration

The example of Sweden

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SVERIGE BYGGER

EN NATIONELL INFRASTRUKTUR FÖR GEODATA

- My message:
- Geospatial data enables NSI's to produce new statistics of great importance to measure sustainable development!

Spatial data and geospatial applications at Statistics Sweden

- Long tradition
- GI integrated in production in two ways:
 - Creation of geospatial products (grids, localities etc)
 - Geospatial processing as part of the official statistics production chain
- Land use statistics rely on high quality spatial data
- Some 20 products concerning use of land and water, land ownership, urban green areas, designated areas, coastal and urban development etc



User needs - The role of the municipalities

- Responsible for a larger share of **public financed services** than in most other countries
- Right to levy **taxes** to finance operations
- To carry out their many tasks they rely on regional and spatial **statistics** – both on municipality and small area level



The INSPIRE Directive

- The European INSPIRE Directive entered in force in May 2007 and will be fully implemented by 2020.
- An infrastructure for spatial information in Europe – supports environmental policies and policies or activities which may have an impact on the environment.





INSPIRE GEOPORTAL

Enhancing access to European spatial data

- 27 Member States provide search, view and download services
- 34 Spatial data themes – both reference data and thematic data from different authorities



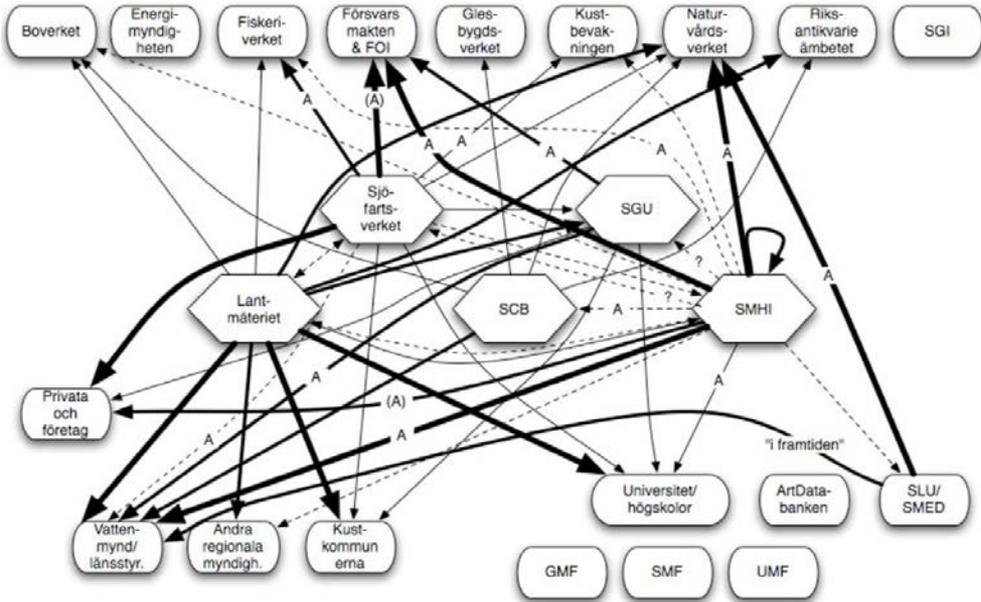
The Swedish Spatial Data Cooperation Agreement

- INSPIRE requires data sharing between public authorities = a Spatial Data Cooperation Agreement.
- The parties in the Spatial Data Cooperation offer each other their spatial data for official use at an annual fee.
- The Swedish Spatial Data Strategy gives the cooperation a broader scope than INSPIRE: the aim is to include as much spatial information as possible.





Before 2011

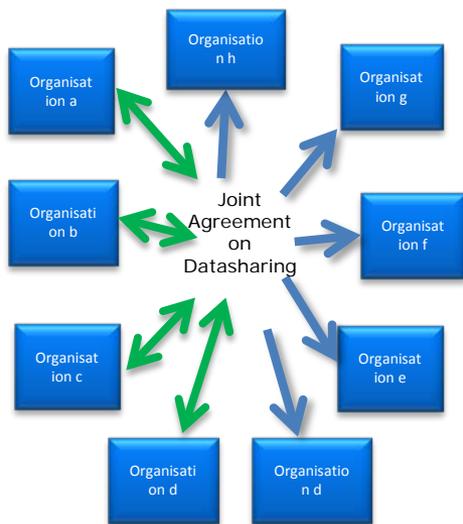


Statistiska cer

and after.....



Spatial Data Cooperation Agreement



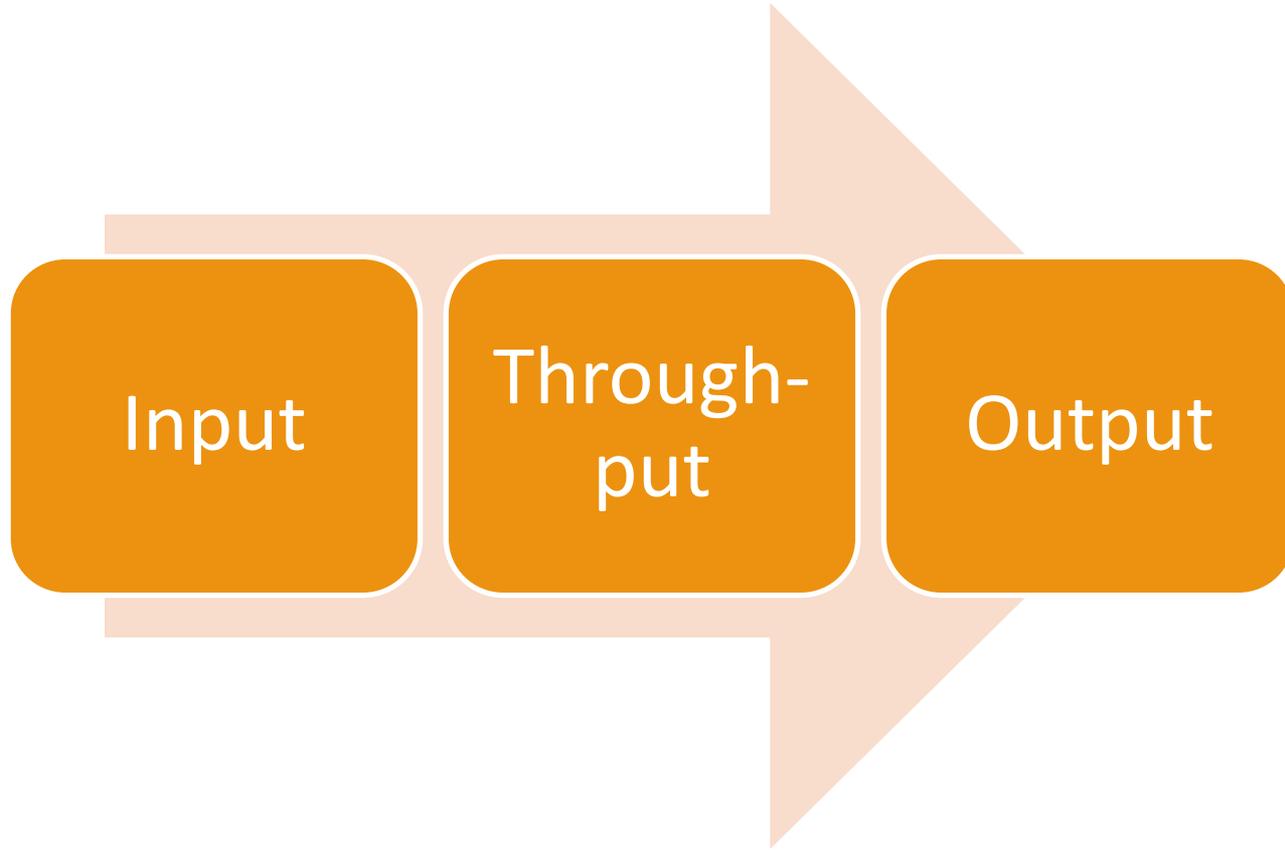
- A part signs *One* Agreement
- A part pays *One* annual fee
(Municipalities \$ 15 000 – 150 000)
(Public Authorities \$ 7 500 – 980 000)

Gives access to > 400 spatial data products from 19 public data providers

- Geoportal
- Product catalogue



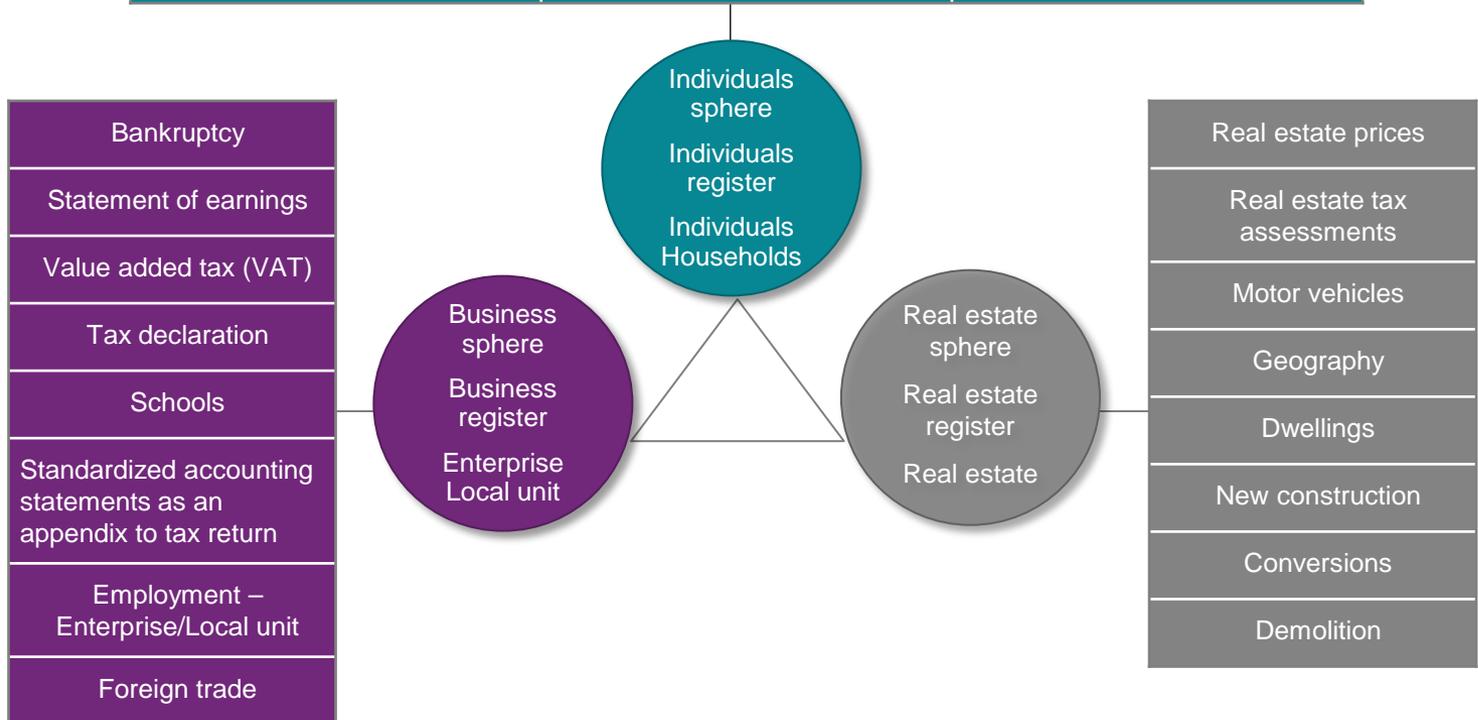
The Statistical Production Process





Input: Register data from Statistics Sweden's data storage

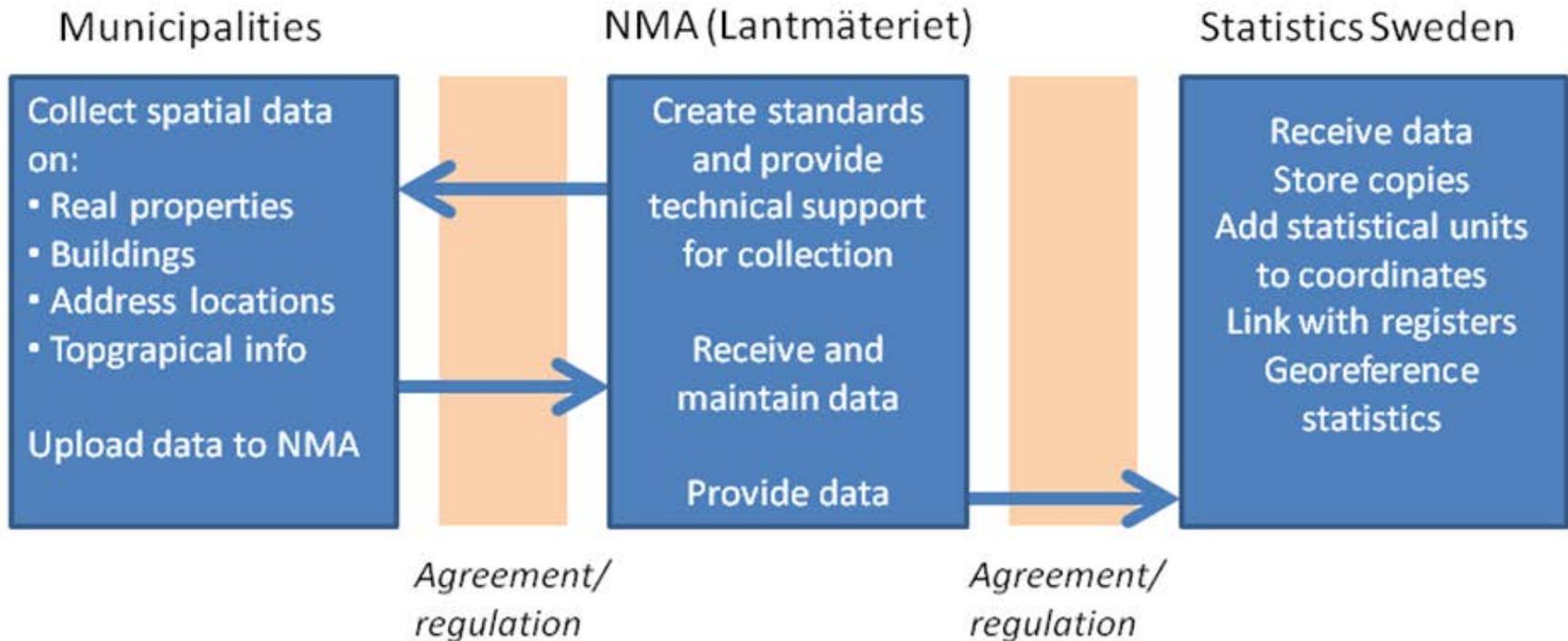
Labour market	Household finances	Living Conditions
Population	Income and taxation	Employment - individuals
Democracy	Integration	Education

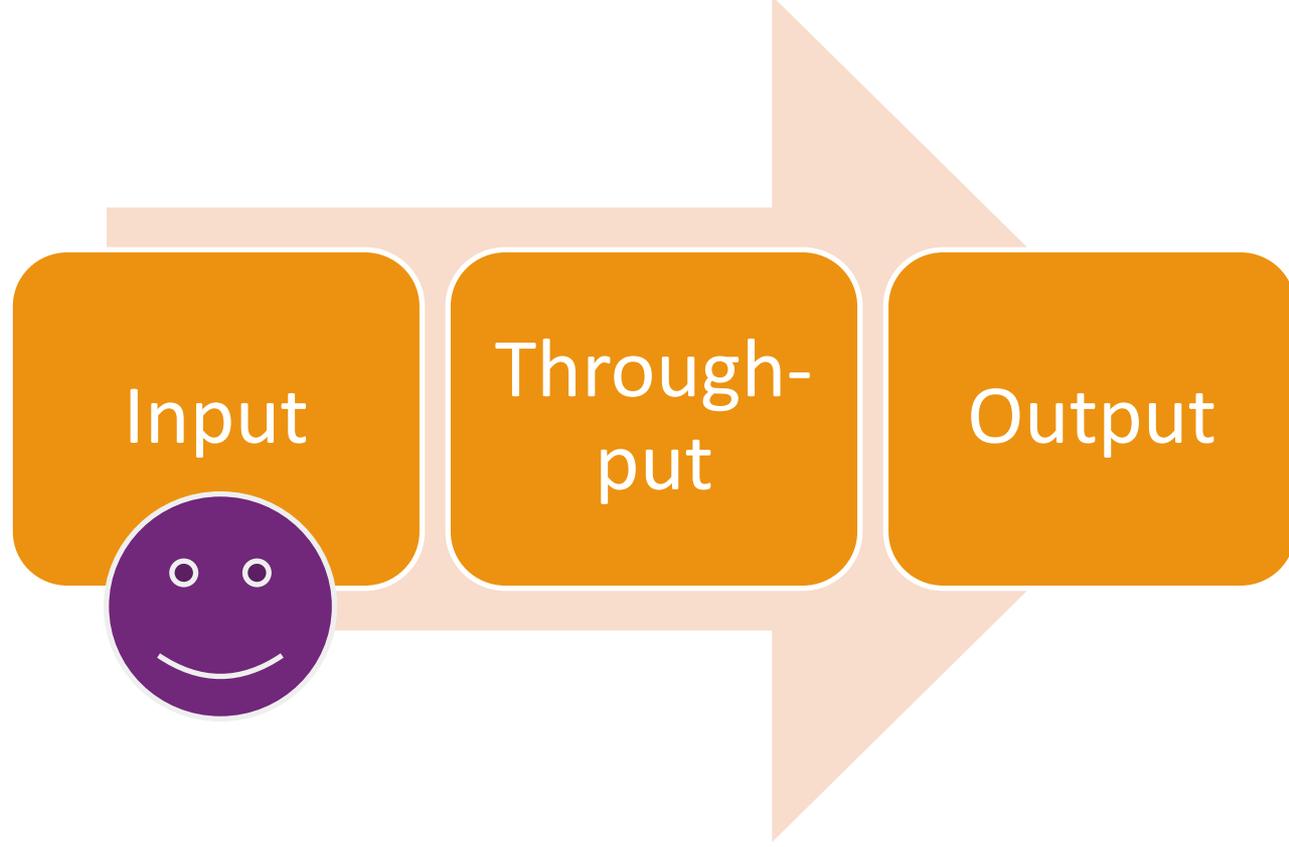


Input: Authoritative spatial data

Real property – Adresses - Buildings

Statistiska centralbyrån Statistics Sweden







Output: The Statistical Atlas

Statistical Atlas | File | Settings | View | Help | Data | Regions | List Data | Categories | Line Style | Ind. Filter | Ind. Select

Map | Scatter Matrix | Population 65+ years

Scatter Plot | Table Lens | Data Table | Size: Total population | Scale: [Slider]

Content Browser

- Default Stories
 - An aging population
 - Population growth 2011

An aging population

by Statistics Sweden on 02 May 2012

We have an aging population in Sweden. The average age has risen from 37.1 years in 1968 to 41.1 years in 2011. The proportion of older persons age 65 and above is steadily increasing and is now at 18.8 percent.

The proportion varies between 12.2 percent (Knivsta) and 31.2 percent (Överkalix). The municipalities in southern and central Sweden generally have a lower proportion of older persons than the northern municipalities, but there is an exception. For instance, Umeå has a relatively low proportion of older persons (14.8%) while Borgholm (30.1%),

Story Control:

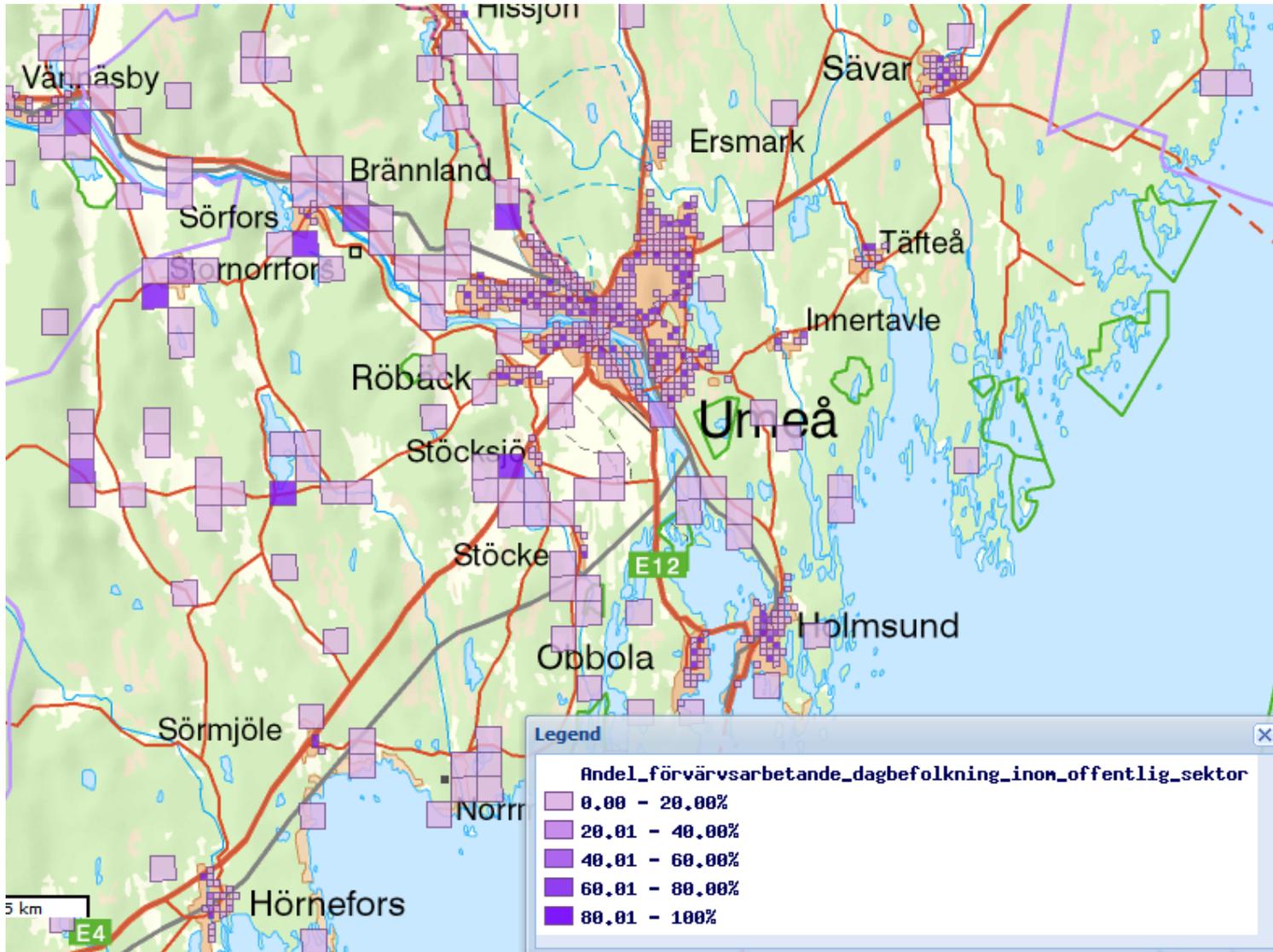
Create Edit Delete
Open Save

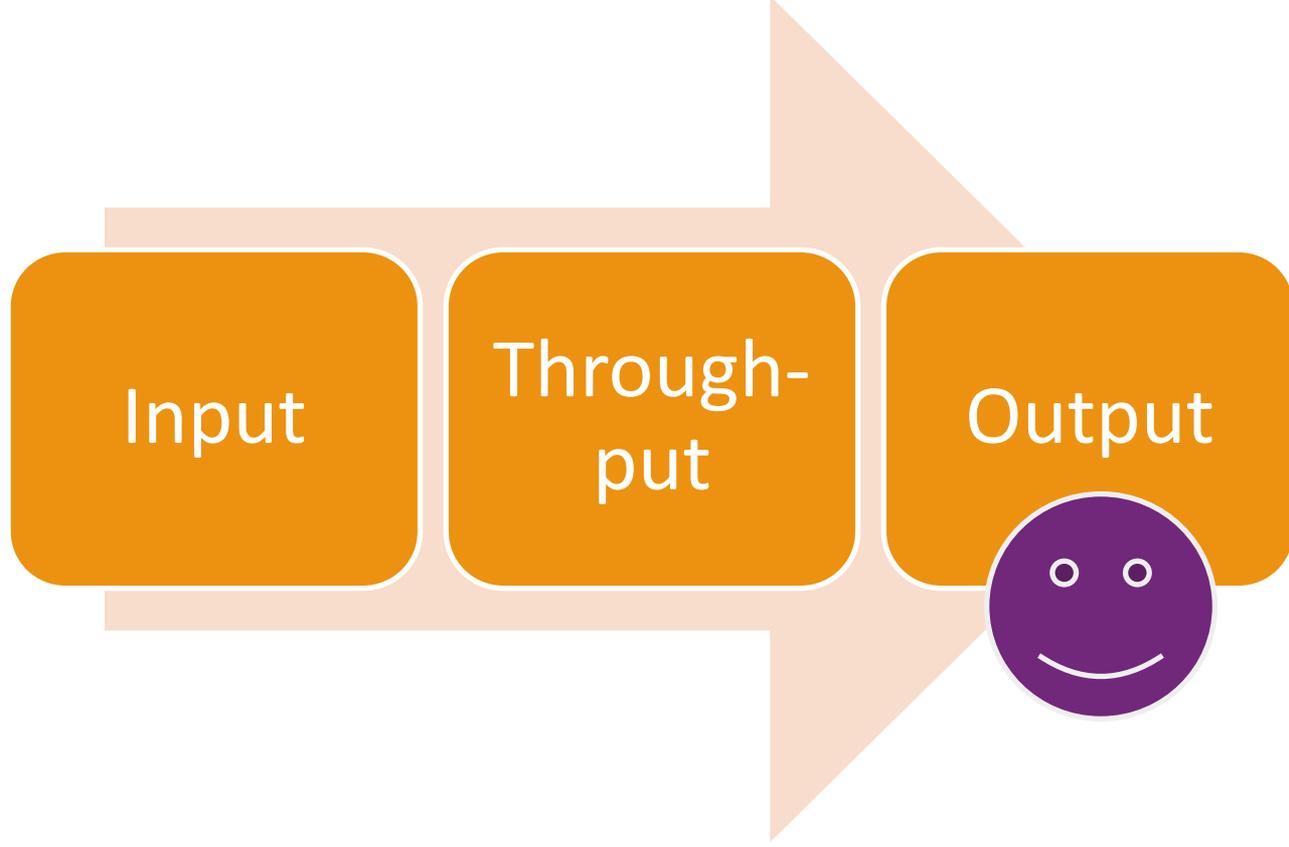
Bar Chart | Time Bar Chart | Distribution Plot | Time Graph | Parallel Coordinates

Population 65+ years

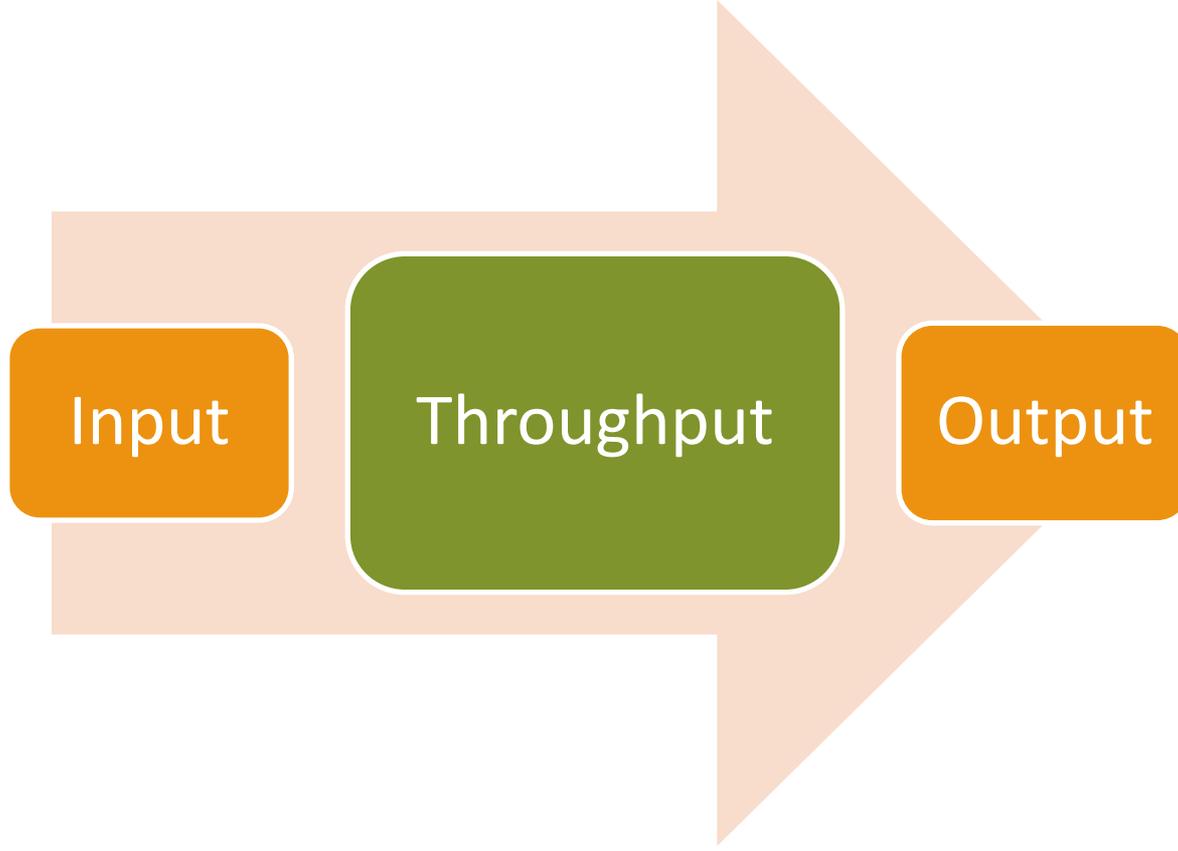
Timeline: 1958, 1970, 1972, 1974, 1976, 1978, 1980, 1982, 1984, 1986, 1988, 1990, 1992, 1994, 1996, 1998, 2000, 2002, 2004, 2006, 2008, 2010

Output: Gridmap - daytime population





Focus on the Throughput phase



Before 2011

After 2011

Register data

Type: Industry
Owner: Company
Land area: 200.000 m²
Built-up land: 200.000 m²?

Type: Industry
Owner: Company
Land area: 200.000 m²
Built-up land:
 $200.000 \text{ m}^2 - 78.000 \text{ m}^2 =$
122.000 m²

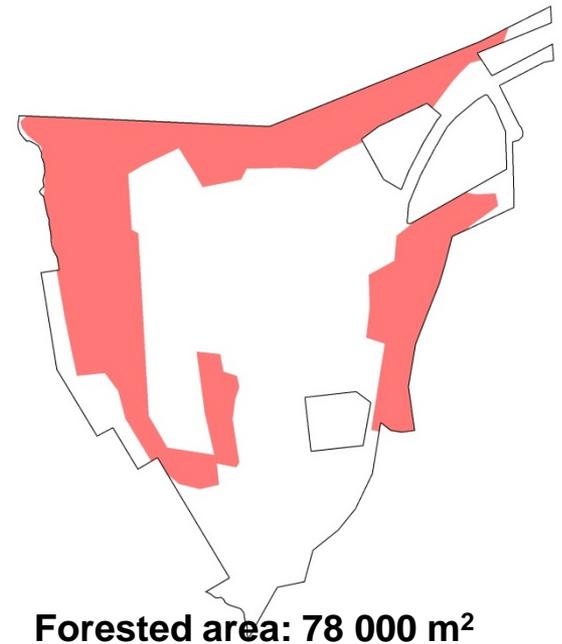
Improved figure: 122.000 m²

Geospatial data

X, Y
Coordinates



Land area: 200.000 m²



Forested area: 78 000 m²



Land and water areas

- Cadastral map used for the first time in 2012
- Some 4.2 million real property parcels aggregated to municipalities
- Combined with water bodies
- All data in scale 1:10 000
- **Result: Land area of Sweden “shrunked” with some 3,000 square kilometres or 0.7 percent**



Västby 2° 4 m/s

helagotland.se

NYHETER | SPORT | OPINION | FAMILJ | KULTUR/NÖJE | WEBB-TV | BLOGGAR | KRÖNIKA | EKONOMI

Sverige | Världen

Höghusets tionde våning på plats

Hermansson ute ur biskopsleken

Syns du på Gotlands turistsajt?
Nu bokar turisterna årets resor, boende och aktiviteter på ön och de gör det på nätet.
Hittar de ditt företag?

Go

"Vi minskar inte i värde bara i yta"

Av helagotland.se Eva HC Nyström. Publicerad 2012-03-12

Gotland är sex kvadratkilometer mindre än man trott. Det motsvarar Furillen och Lilla Karlsö tillsammans. Samtidigt har Sveriges yta minskat med nästan exakt lika mycket som Gotland är stort.



+ Visa bildinformation

Det visar färiska beräkningar från Statistiska Centralbyrån, SCB. - Jaha, vad ska man säga om det, säger en något överraskad Per Ahlström, förrättningslantmätare vid länstyrelsen på Gotland.



SENASTE NYTT LOKALT

- 13:15 Tre vill starta friskolor
- 13:06 Tre greps för inbrotten
- 12:49 Rattfull åtalad efter biltur
- 12:47 Hermansson ute ur biskopsleken
- 11:01 Fyra misstänkta för rån

"Barnillatet 'glory hole' för handmassage"
Aron Andersson, prylexpert

metro

Så läser du Metro i mobilen!

Start | Nyheter | Kolumner | Stockholm | Göteborg | Skåne | Nöje | Mat & Dryck | Resor | enro 50k

Sverige | Världen

Här är frågorna som splittrar Alliansen

Polis filmade kvinnliga kollegor i duschen

Tre svenska par berättar om livet efter bröllopet

Maktskifte om det vore val i dag

Experten: De har betett sig som cowboys

Uppdaterad 2012-03-12 16:28

Relaterat

- Sambo till tv-kändis misstänkt för mordbrand
- Planerar nya spår – där ingen bor
- Tolgfors: FOJ gick för långt
- Dumpad på Facebook – brände ner ex-kompisens hus

Sponsrade länkar

Fakturerings
Överlämna faktureringen till oss! Vi förenklar småföretagarens vardag
www.intrum.com/faktura

Exklusiva klockor
Stort urval av märkesklockor. Välkommen in i butikken i Göteborg
www.larssandin.se

Mest läst just nu

Vårt lilla land i nord har nu blivit ännu mindre. I alla fall på pappret. Statistiska centralbyrån, SCB, har nämligen gjort en

Först och främst med teknik och IT
Tisdag 13 mars 2012

Annonsera Prenumerera Om Ny Teknik

NyTeknik

Surfa direkt från sjukhuset

Nyheter | Lediga jobb | Nyheter i bild | Webb-tv | Debatt | Populär teknik | Teknikrevyn | Kaianders | Teknikfrågan | Miniproblemet | Smått och gott

Va, har Sverige krympt?

Av: Jonas Melzer

Publicerad 9 mars 2012 16:07

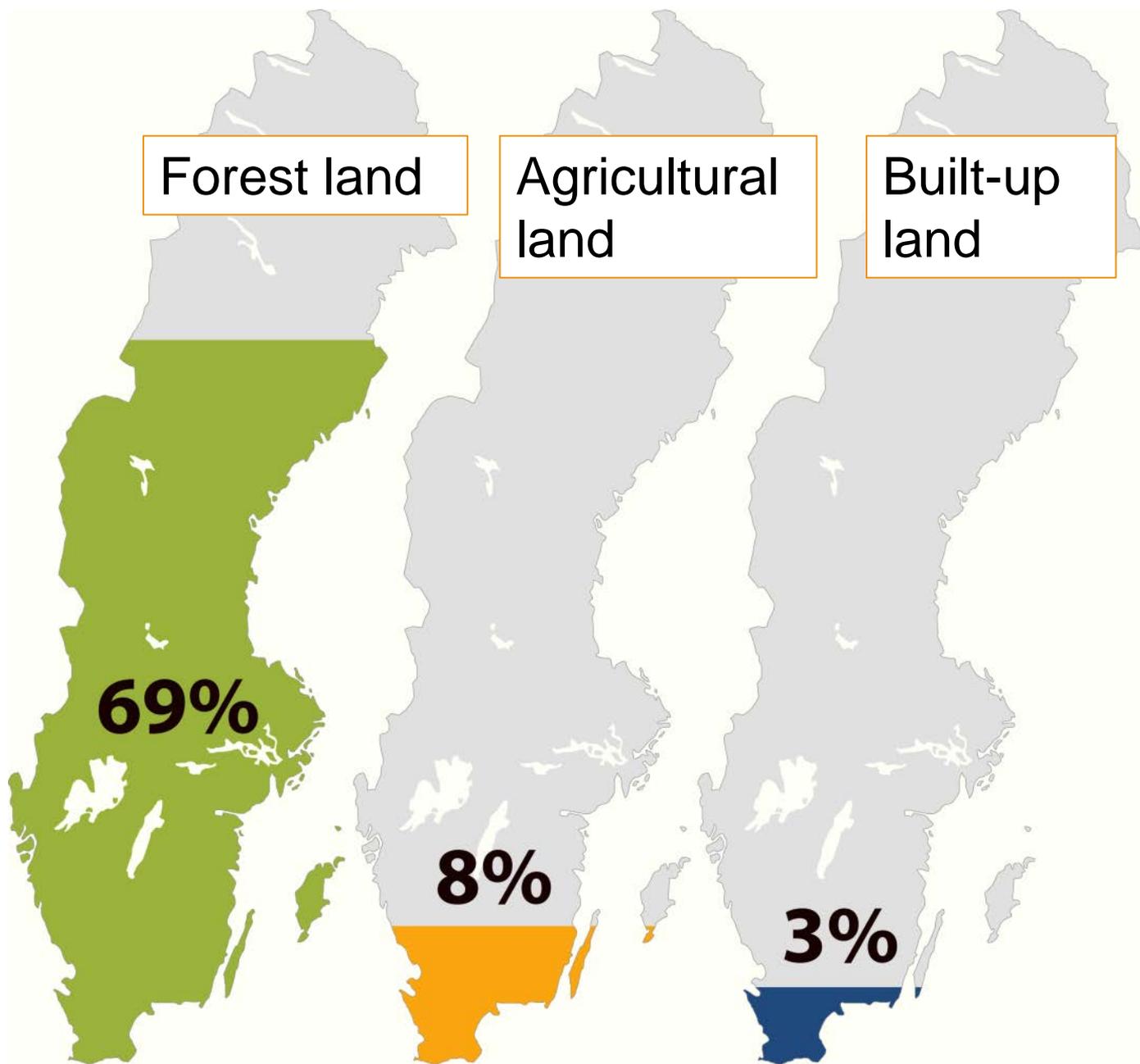
9 kommentarer

Enligt en ny beräkningsmodell är vårt avlånga land nu 3000 kvadratkilometer mindre, visar ny statistik från SCB.

Verktyg

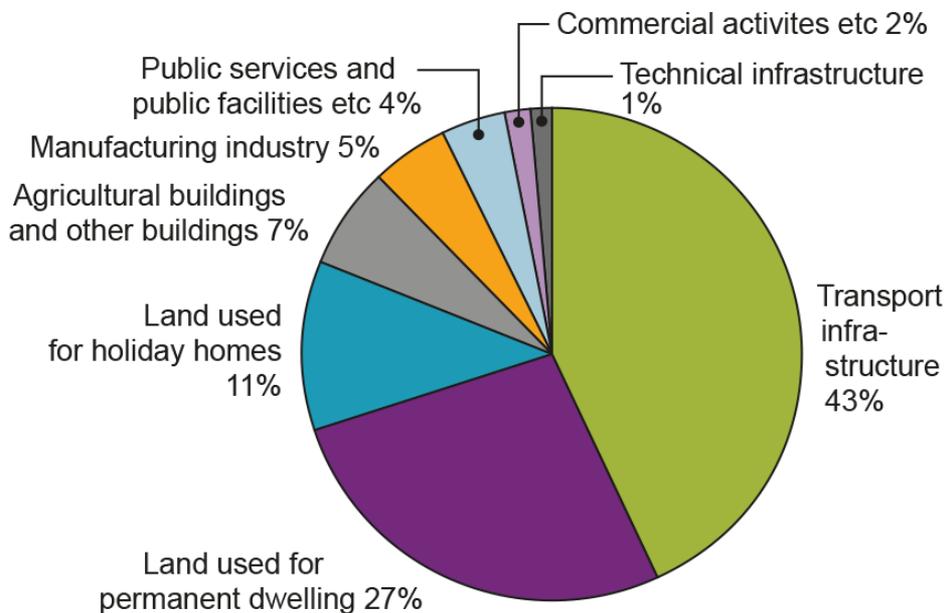
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har gett
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stort. 77
de utgörs av insjöar och vattendrag, och vattendragen som blivit större. att mäta geodata. ligt. Sjöar och vattendrag är m landhöjning och stranderosion. sänksningar har betydelse för . Det förklaras till viss del att d till skillnad från förra gångens nu har en landareal som beräknas rocent mindre än vid den senaste

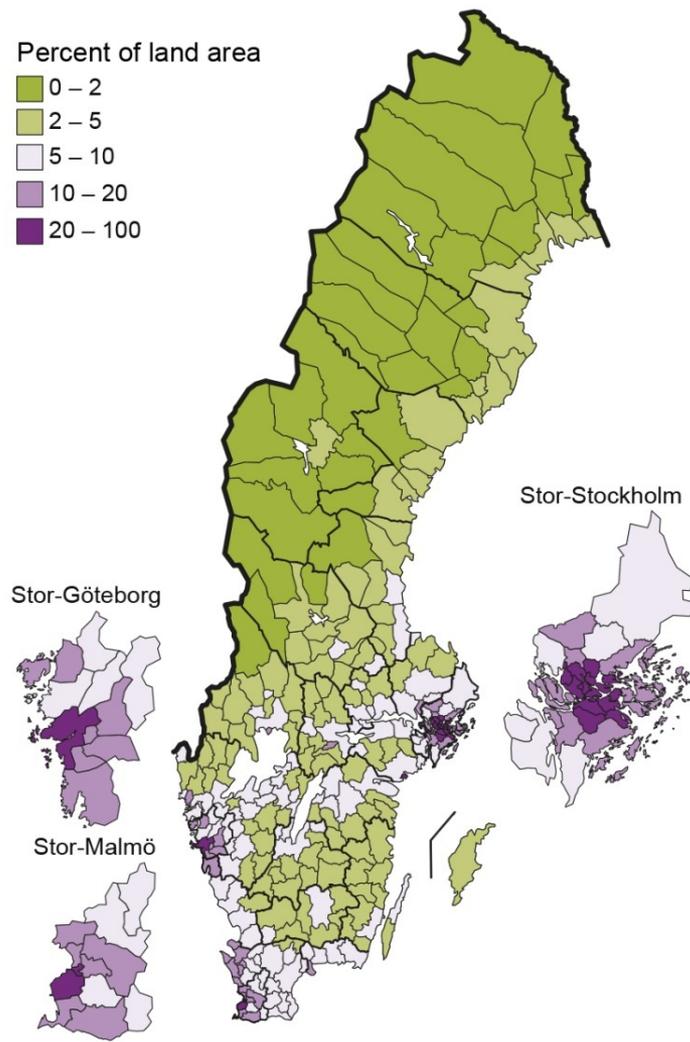


Built-up land

- 8 categories of built-up land
- Some categories reduced due to better methodology



Built-up and associated land by municipality in 2010, share of land area, percent



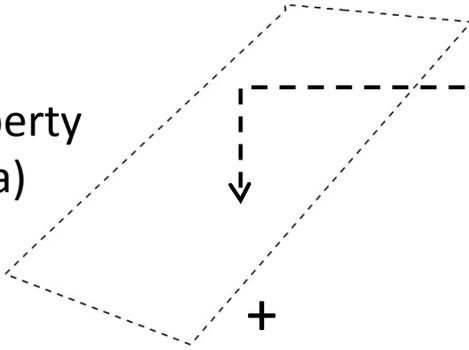


Statistics Sweden

Statistiska centralbyrån

Spatial data

Real property (area)



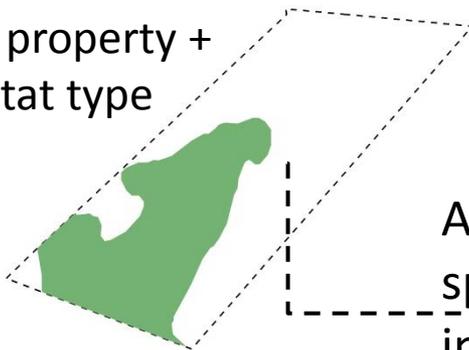
Habitat type (area)



+

=

Real property + Habitat type

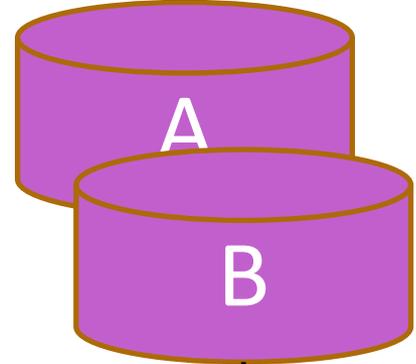


Linking of register data and spatial data

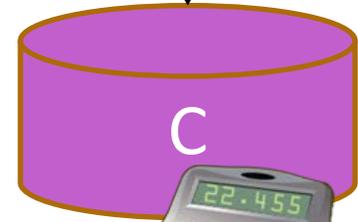
Pilot study on Biodiversity

Areas and selections of spatial data goes back into the registers

Registers

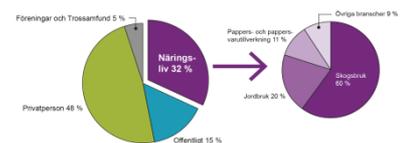


More data are added



Distribution of areas

Statistics



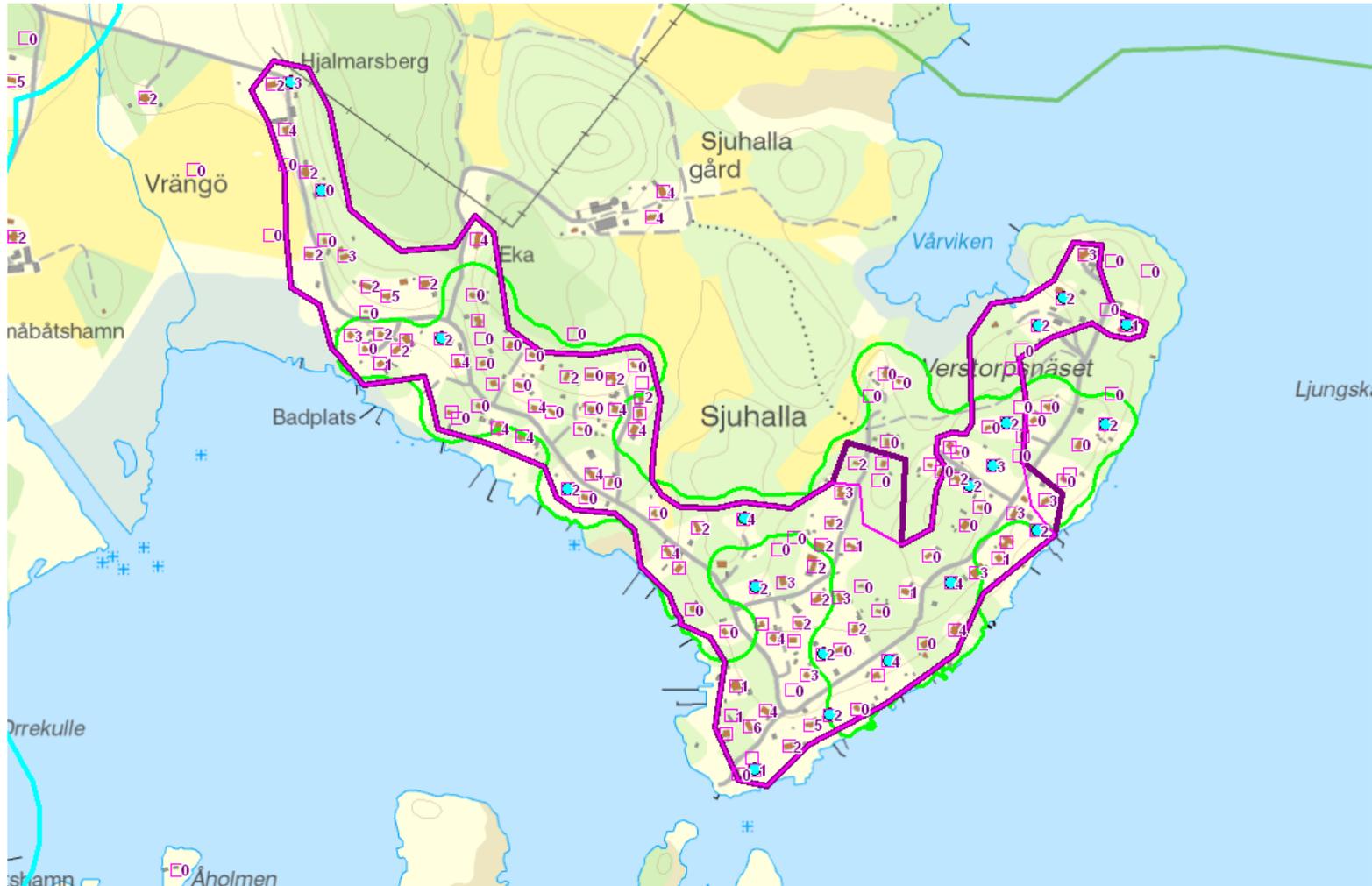
Delineation of localities

Statistics Sweden

Statistiska centralbyrån



Identifying new localities

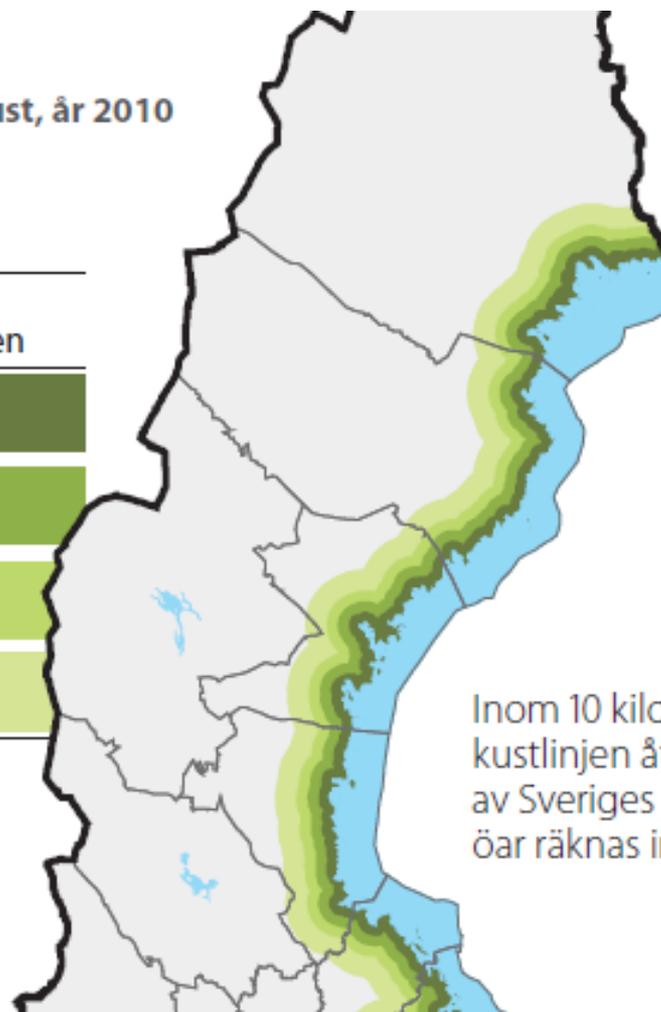


New statistics on functional areas – people living close to the sea

NÄRA HAVET VILL JAG BO

Sveriges befolkning efter avstånd till kust, år 2010

Avstånd till kust	Antal boende	Andel av befolkningen
10 km	4 625 000	49 %
20 km	5 435 000	58 %
30 km	5 904 000	63 %
50 km	6 660 000	71 %



Inom 10 kilometer från kustlinjen återfinns **49 %** av Sveriges befolkning. Större öar räknas in i kustlinjen.

Challenges for the NSI's

- Evaluation of spatial data to know that it is fit for purpose (quality, accuracy, coverage, definitions etc)
 - Close dialogue is needed between NMCA's and NSI's!
- NSI's need GIS-competence and bench-marking!
- The GIS processes needs to be acknowledged and incorporated in the statistical production processes!



When **census or register data** is combined with **spatial data** totally new statistics are created – important to monitor **sustainable development** beyond GDP!