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Statistiska centralbyrån

# SEEA for climate action

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# Cooperation with IPCC: Nobel Peace Prize for climate statistics in 2007.

Sara Ribacke worked at SCB and we have this document on the wall to be proud of. Good cooperation between statisticians and IPCC from the start!



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## The System of integrated Environmental and Economic Accounts (SEEA) can help with climate change relevant statistics on driving forces, emissions and responses

- A statistical satellite system to economic accounts (SNA), showing the environmental pressure from the economy
- measuring fossil and renewable energy use, greenhouse gas emissions (by industries, government and household),
- environmental taxes, subsidies and environmental protection expenditure,
- green jobs, environmental footprints etc.



# Environmental Accounts – Emissions to air Q1 2020



## **Greenhouse gas emissions in Sweden's economy decreased in the first quarter of 2020**

Statistical news from Statistics Sweden 2020-09-01 9.30

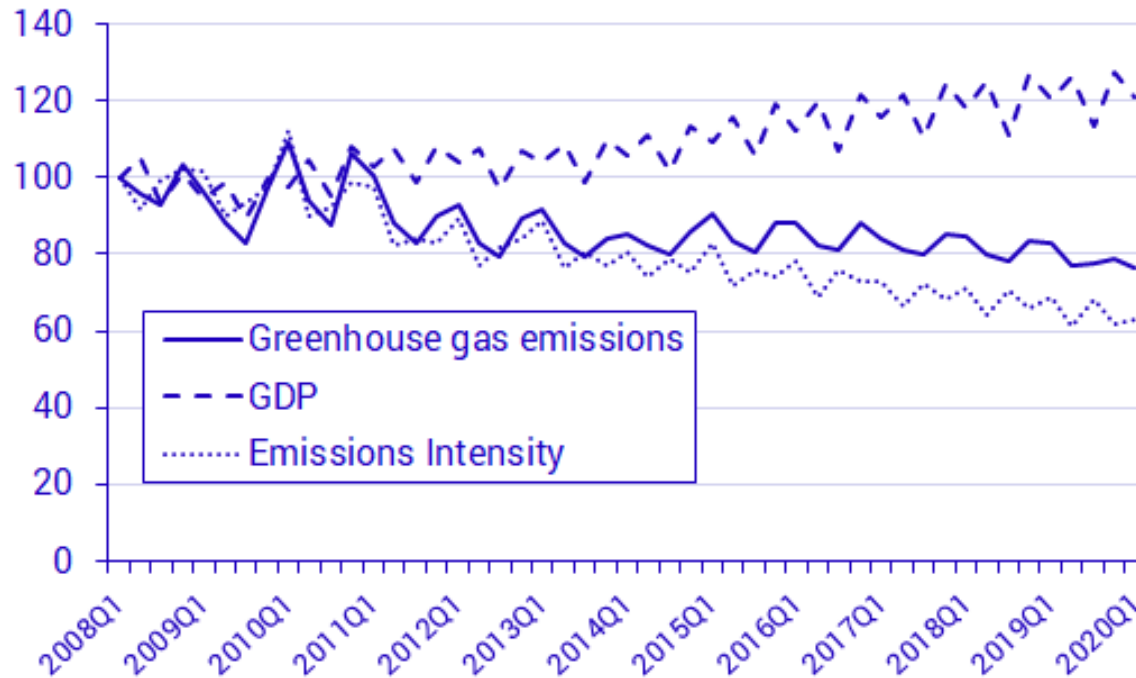
- Greenhouse gas emissions in Sweden's economy decreased by 8.1 percent in the first quarter of 2020 compared with the same quarter in 2019. This decrease is mainly due to a decrease in emissions from the energy and transport sectors and manufacturing.

<https://www.scb.se/en/finding-statistics/statistics-by-subject-area/environment/environmental-accounts-and-sustainable-development/system-of-environmental-and-economic-accounts/pong/statistical-news/environmental-accounts--emissions-to-air-q1-2020/>



# Quarterly greenhouse gas emissions, GDP and emissions intensity

2008Q1–2020Q1, constant prices 2019

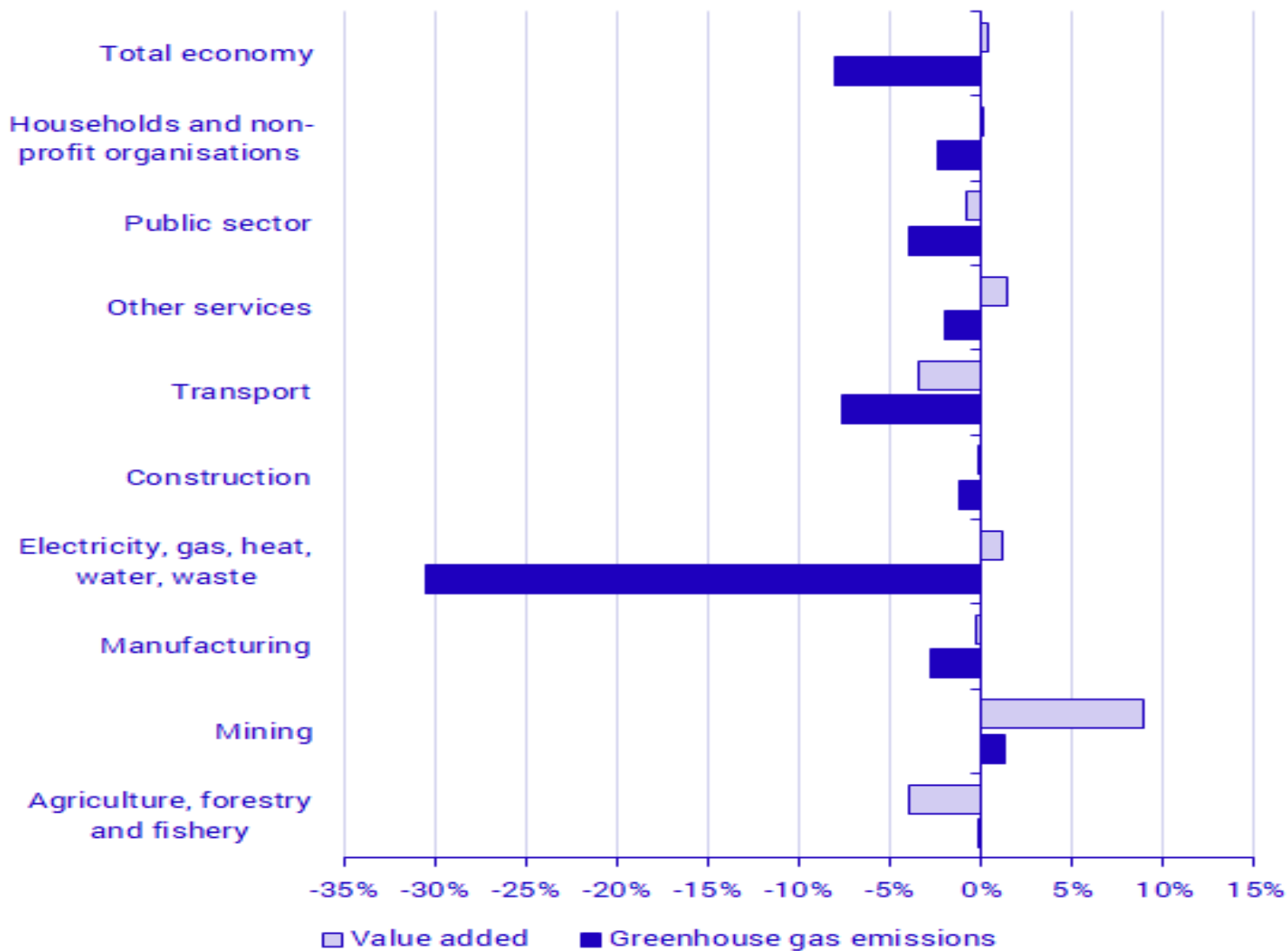


# Quarterly emissions since 2015, time series starts 2008

- A lot of interest from analysts, researchers, journalists
- One of the few environmental statistics that are published more often than yearly
- Big change from earlier situation when there was a lag of nearly 2 years
- Based on quarterly and monthly energy statistics, as well as the quarterly national accounts data and the data from the yearly SEEA emission accounts.



# Greenhouse gas emissions and value added by NACE sector in 2020Q1, percentage change compared with 2019Q1



# Greenhouse gas emissions and value added by NACE sector 2020Q1.

Thousand tonnes of carbon dioxide equivalent, SEK millions, constant prices 2019

NACE 2007 industry	Greenhouse gas emissions			Value Added		
	2020Q1	Change compared to same quarter 2019		2020Q1	Change compared to same quarter 2019	
Agriculture, forestry and fishery	2 144	-4	-0,2%	19 551	-817	-4,0%
Mining	276	3	1,3%	11 571	949	8,9%
Manufacturing	3 681	-105	-2,8%	173 517	-601	-0,3%
Electricity, gas, heat, water, waste	1 861	-818	-30,5%	37 973	442	1,2%
Construction	418	-5	-1,2%	74 151	-43	-0,1%
Transport	2 131	-178	-7,7%	39 582	-1 416	-3,5%
Other services	789	-16	-2,0%	506 260	6 907	1,4%
Public sector	144	-6	-4,0%	240 237	-2 009	-0,8%
Households and non-profit institutions <sup>1)</sup>	1 928	-46	-2,4%	13 641	7	0,1%
<b>Total economy</b>	<b>13 371</b>	<b>-1 175</b>	<b>-8,1%</b>	<b>1 245 742</b>	<b>4 713</b>	<b>0,4%</b>



# Method

## Stationary emissions

Industry:

- **Quarterly fuel statistics**
- Calibration for complex industries

Service industries, other industries:

- **Yearly energy balances**
- **Monthly fuel, gas and inventory statistics**

Emissions factors from yearly method

## Mobile emissions

- **Monthly fuel, gas and inventory statistics**

By industry according to yearly method

## Process emissions

2008-2013: Yearly data/4  
2014-2015 use trend in yearly data

**CH4 from old waste deposits:**  
Decrease of 8% yearly

**Industry processes and product use:**  
Model by values added by industry (national accounts)

# Quarterly emissions increase the general knowledge about the driving forces

- Weather and economic cycles show in the trends
- Emissions can decrease through fuel changes and more efficient fuel use.
- Industries vary in the relation economic output and emissions
- We show a change with the corona situation, but also an effect of changing economic environmental policies that has led to less fossil fuel use.



# New developments: fossil fuel transfers, for Agenda 2030?

Indicator 12.c.1: “Amount of fossil fuel subsidies per unit of GDP”. UN Environment is custodian for the indicator. International subsidy data available from collections of IEA, OECD, World Bank, IMF

Report from Statistics Sweden to be published 6 October. A task force of NSI:s have shared experiences, assessing what data may be compiled via SEEA. Ideally to find ways to make the reporting internationally harmonized.

The need to measure fossil fuel transfers has been voiced by users for many years.



# SEEA fossil fuel /GHG transfers

1. Direct transfers: from the state to industry (as SNA subsidy definition), but also including transfers to international beneficiaries, households as well as capital transfers (investment grants)
2. Effective carbon rates on emissions (Euro/tonnes of CO<sub>2</sub> emitted). Different tax rates on fuels can be combined with data on energy use and carbon dioxide emissions. With national excise tax, energy taxes, carbon taxes, ETS (emission trading systems) as a basis.
3. Other developments are expected. Still in an early phase.





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# Prince project: How to use Environmental Accounts (SEEA) – Policy-Relevant Indicators for National Consumption and Environment

Research project 2015-2019

Environment protection agency and Swedish agency for marine and water management research funding

Consortium: SCB, SEI, Chalmers, KTH, NTNU (Norway), CML & TNO (Netherlands)



# Main objective in Prince-research call

- Quantify environmental pressure from Swedish consumption, both in Sweden and abroad.
- Overarching objective for Swedish environmental policy: The Generational Goal aim to hand over to the next generation a society in which the major environmental problems in Sweden have been solved, without increasing environmental and health problems outside Sweden's borders.



# Environmental pressures included in footprint

- Pollutants
  - Emissions of greenhouse gases and traditional air pollutants;
  - Chemicals
- Resource use
  - Land, water use, material flows
  - Fish, meat
  - Pesticides, Antibiotics





# Official footprint statistics

- The environmental pressure from Swedish consumption for greenhouse gas emissions is now official statistics and is published yearly, available on the website
- The interest from society has been overwhelming
- Results from Prince project on project website
- [www.prince-project.se](http://www.prince-project.se)
- Good example of what integrated statistics can do!





# Conclusions

- SEEA can contribute with quarterly greenhouse gas emissions statistics
- SEEA can be used to measure greenhouse gas transfers, showing how economic policy can hinder a transition to cleaner fuels.
- SEEA can provide environmental pressure from consumption, also known as footprint indicators
- Together these analyses can help measure changes in environmental pressure and show details in how the greening of the economy is developing

