

Climate change indicators for Nordic countries using existing statistical data

In 1999, a cooperation group of the energy and environmental sectors in the Nordic countries prepared an inventory of potential climate change indicators using existing data. Their report¹ also analysed the results of the selected indicators for the Nordic countries.

The table below presents their summary of climate change indicators. It lists a number of relevant statistics for driving force and response indicators that are mainly available from national statistical systems. The response indicators are in fact mitigation indicators. The report did not consider monitoring of adaptive capacities and vulnerabilities.

Since 1999, environmental statistics have improved notably and a new inventory would probably result in a longer list of available statistical data. Many of the following indicators would, however, require re-aggregation of existing statistical data.

Driving force indicators	Pressure indicators	State indicators	Response indicators
Climate and natural conditions: land use, annual forest growth	Actual emissions: emission of all GHGs (Index, per capita), of carbon dioxide (total, per source), of methane per source, of nitrous oxide per source and of other GHGs	Global temperature	Goals and agreements: GHG emissions compared to requirements of Kyoto Protocol
Population: size, density, development and share of population in major cities		Atmospheric concentration of carbon dioxide	Response indicators for CO₂: environmental taxes and prices of selected fuels (gasoline prices and taxes, energy prices (industry/ households), taxes on electricity), prices on public transport, energy production from new renewable energy sources, non-fossil energy use, energy efficiency and intensity (energy efficiency in power plants, industrial energy use per unit production, industry oil consumption per unit production, residential energy intensity), transport (Specific gasoline consumption, passenger cars, number of electric cars), measures to increase forest growth
Natural resources: reserves of non-renewable energy sources, renewable energy sources, annual production capacity for hydropower	Adjusted emissions: energy consumption ad. for temperature, emissions of CO ₂ equivalents per GDP unit	Atmospheric concentration of other GHG (Methane, CFC-11 etc.)	
Transport, roads and infrastructure: road length, road transport of goods, domestic passengers by air, personal journeys by mode of transport, transport of oil and gas by pipelines, by tankers	Sinks of CO₂: forest sinks	Radiative forcing	
Economic conditions and production: GDP per capita, expenditures (housing, heating, transport), consumer prices: total, housing, heating, transport, private consumption, "industry profiles", value added per unit emission, industrial structure and exports of goods		Other state indicators	
Housing and building structure: population in big blocks of flats, district heating of total residential heating, energy sources for heating by building types, residential area			Response indicators for CH₄: taxes on waste deposition, collection of methane from landfills, methane from animals

¹ Inventory of Climate Change Indicators for the Nordic Countries: www.ssb.no/a/histstat/doc/doc_199916.pdf

<p>Energy production and trade: primary and secondary energy production, electricity production, trade with energy, net imports of electricity</p>			<p>Response indicators for N₂O: agriculture (output per unit fertiliser applied), industry</p>
<p>Production, use and trade of wood products: production of wood products, annual removal of forests, use of fuel wood, foreign trade</p>			<p>Response indicators for other GHG</p>
<p>Energy use: end use of energy (index, commodities, consumer groups, per capita)</p>			
<p>Other driving force indicators: use of nitrogen fertilisers, number of domestic animals, deposition of waste</p>			