

Sweden



Trilemma Rank

2

Trilemma Score

84.2

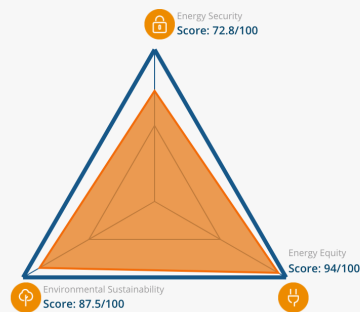
Balance Grade

ABA

Sweden comes near the top of this year's Trilemma, ranking 2nd globally with strong scores across the board. Security and Sustainability are particularly high, with the latter showing a slow but steady improvement since mid-2000, driven by reduced GHG-emissions and lower intensities of final energy consumption. Sweden ranks high on Energy Security, due to a well-diversified supply and stable grid. Sweden balances the Trilemma well with a balance grade of ABA, leaving space for future improvements. The overall effects of COVID-19 are yet unclear and depend largely on the speed of economic recovery.

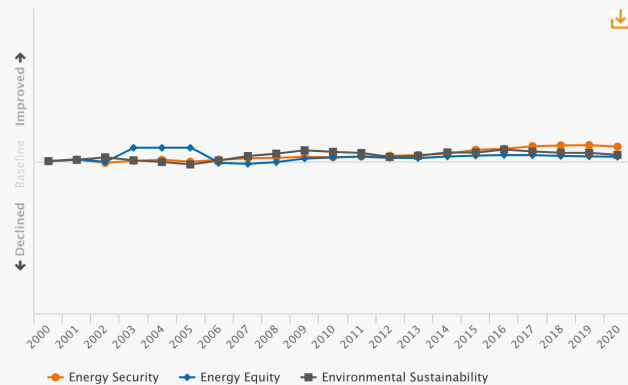
**Population**
10.2 (millions)**Land Area**
407.3 (thousand sq. km)**GDP Per Capita**
54,608 (PPP US\$)**Industrial Sector**
22.6 (% of GDP)**GDP Growth**
2.2 (annual %)

Balance



Historical Trilemma Scores

Trend lines track the country's performance in each dimension, beginning with a baseline of 100 in the year of 2000



Trends and Outlook

On sustainability Sweden traditionally ranks high in part due to a carbon tax introduced in 1991 increasing five-fold over the years to 'around 140 USD per tonne', making it the highest carbon tax in the world. The tax is the major instrument to reduce GHG-emissions and has accelerated the energy transition in different sectors. The result can be seen in the district heating sector using almost 100% bioenergy. Taxation of pollutants is a common instrument in Sweden. The industrial sector is mainly in the EU-ETS.

In 2017, Sweden passed a climate framework which legally binds the country to reach net-zero emissions by 2045 with the goal to become the first fossil-free welfare state. Goal achievement is supported by an almost decarbonised electricity generation and heat network. Nevertheless, the goal is challenging. The current focus of politics is the transport sector, which accounts for a third of national CO₂-emissions, with the tough goal of a reduction by 70% between 2010 and 2030. Special policies and financial support schemes for low-emission vehicles and low-emission fuels are in place. Another major focus is on decarbonising large emitters such as the steel industry, cement and refineries.

In terms of electricity supply, nuclear and hydro power provide about 40% each and wind production is expanding rapidly mostly in the north. There is also an important production of Combined Heat and Power in the district heating system. The Swedish nuclear fleet currently consists of 8 reactors, two of which are to be closed by 2020. The debate is currently about the security of supply when the reactors are shut down. Even though electricity is abundant, during June 2020 very high electricity prices were experienced in the southern parts of Sweden, leading to the restart of one of the reactors that is due to be shut down permanently. Delays in the expansion of transmission capacity from large scale hydro and wind power in the north to the south made this necessary. Delayed grid expansion might affect the growth of wind power and energy security negatively in the immediate future.

The Swedish goal of a 100%-renewable electricity system by 2040 will also require long term solutions to possibly replace the remaining 6 nuclear reactors, which reach a lifetime of 60 years in the early 2040s to maintain the excellent score on energy security. Electricity demand is expected to increase significantly in the future due to the replacement of fossil fuels in the transport and industrial sectors.

Key metrics

Metrics are determined relative to other countries, with a full bar representing a score of 100.

Energy security ⓘ

Import dependence

Diversity of electricity generation

Energy storage

Energy equity ⓘ

Access to electricity

Electricity prices

Gasoline and diesel prices

Environmental sustainability ⓘ

Final energy intensity

Low carbon electricity generation

CO₂ emissions per capita

Country context ⓘ

Macroeconomic stability

Effectiveness of government

Innovation capability

2020 Performance

Trend 2010-20

