



SWEDISH NAO

Support to solar power in Sweden

Martin Hill, WGEA Spring session, 8 April 2020

Audit background and motive

- Sweden's energy and climate policy objectives
 - 100 percent renewable electricity generation by 2040
 - The objectives do not specify the type of renewable energy sources to be used
 - Should be achieved in a cost-efficient way
 - Solar power is one of several possible technologies
- Solar power generation in Sweden receives many subsidies
 - Renewable electricity certificates
 - Investment support
 - Tax subsidies
- Solar power generation in Sweden is increasing fast (from a low level)

Audit questions

- Have the government and responsible agencies developed and reported adequate and transparent reference material to facilitate well-founded decisions on support to solar power?
- Has the support to solar power contributed to Sweden's objectives in energy and climate policy in a cost-efficient way?

Audit method

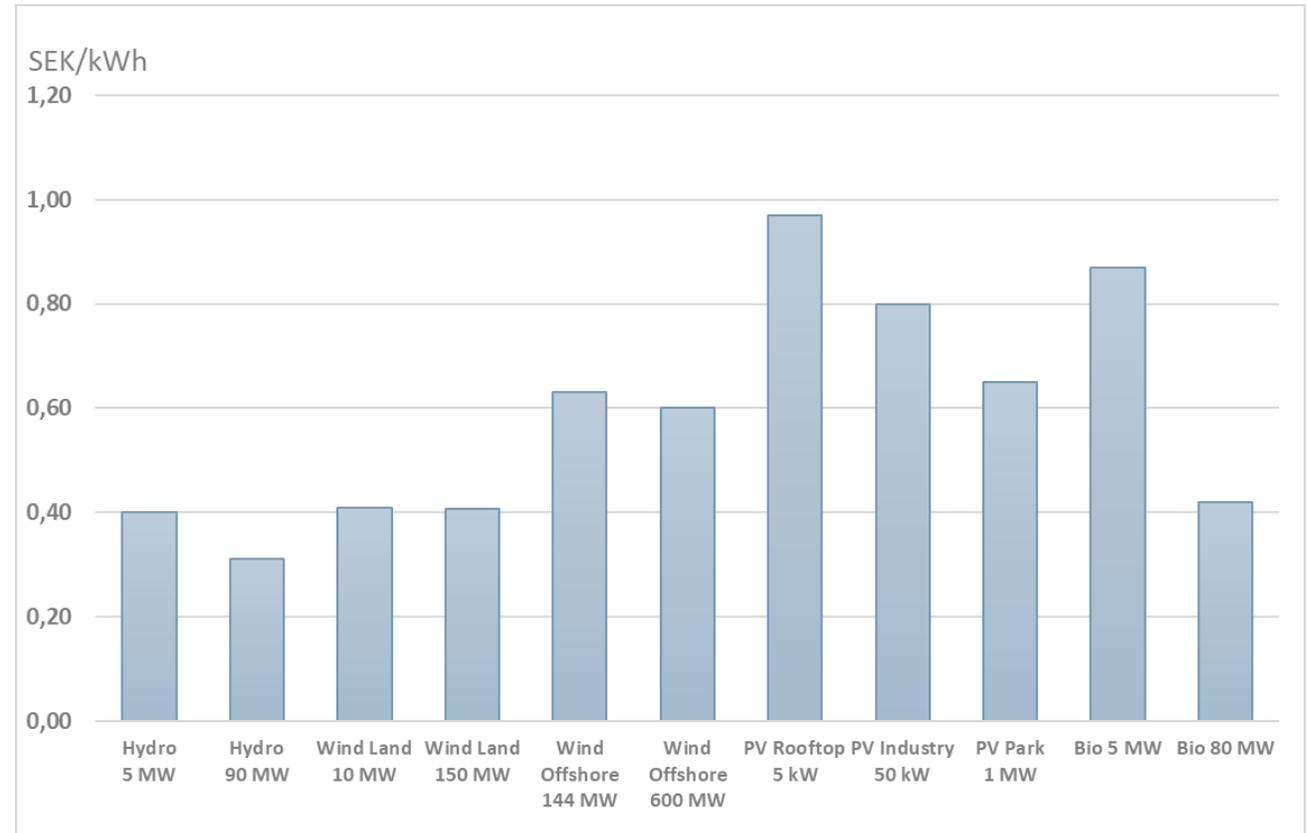
- Reference material to facilitate well-founded decisions:
 - Review of all relevant documents and calculations presented to the parliament.
 - Interviewing governmental agencies and stakeholders.
- Economic and budgetary effects:
 - Calculations of cost of production (both LCOE and profile cost) for available renewable electricity technologies.
 - Calculations of budgetary effects (both short- and long term).

Main findings (1)

- No socio-economic or budgetary policy analysis of the total support to solar power. =>
 - The parliament has not received sufficient information for decisions on support measures.
- Frequent changes of the regulatory framework behind the support =>
 - Difficult to overview of the support and its effect
 - Create unnecessary uncertainty in the market

Main findings (2)

- Production cost estimates for renewable energy in Sweden
 - PV systems 40 to 90 percent higher production cost compared with wind power
 - Small scale rooftop PV systems 50 percent more expensive than solar farms



Main findings (3)

- Small scale PV receives a marginal subsidy of 0,8 SEK/kWh
 - Includes investment grant, energy tax reduction, VAT exemption.
- Difficult to justify the current support to solar power given the target to increase renewable electricity generation in a cost-efficient way.
 - More renewable energy per SEK with a technology neutral system
 - More solar power production per SEK with more scale neutral support
- Budgetary effects of the support may be significant in the long term.
 - Large tax exemptions for solar power could be costly in the long term.
 - Tax exemptions increase the risk for investors.