Finland

Submitted on 22 April 2020

Summary of main findings

<table>
<tr><th>Metric</th><th>Value</th><th>Further information</th></tr>
<tr><td>Overall goal of the LTS</td><td>Carbon neutrality by 2035</td><td>• The goal includes all main greenhouse gases.
• The goal covers all domestic sectors. Inclusion of international aviation and maritime transport unspecified.
• Remaining emissions in 2035 can be compensated by sinks.
• Phase-out of coal energy by 2029 at the latest and halving at least the use of peat by 2030.</td></tr>
<tr><td>Scenarios presented in the LTS</td><td colspan="2">• The LTS presents three scenarios up to 2050, which all fulfil the carbon neutrality requirement by 2035:
- With Existing Measures (WEM) - based on developments under existing policy measures
- Continuing Growth Scenario – assumes accelerated deployment of new technologies, including strong electrification, digitalisation and industrial renewal but no carbon capture and storage
- Savings Scenario – assumes circular economy, the sharing economy, significant energy efficiency gains and carbon capture and storage</td></tr>
<tr><td>GHG reductions</td><td>Modelling results:
GHG emission reductions by 2050 compared to 1990 (excluding removals):
63%, 90%, 87.5%
(i.e. WEM, continuous growth and savings scenarios, respectively)
Targets:
indicative milestones for 2040 and 2050 as for modelling results.</td><td>Emission projections by sectors:
Mio.tCO2 eq
<table><tr><th></th><th>2030</th><th>2050</th></tr><tr><td>Power</td><td>(10.0, 6.0, 7.0)</td><td>(4.0, 0.5, 0.6)</td></tr><tr><td>Industry</td><td>(14.2, 12.1, 14.2)</td><td>(8.3, 1.8, 3.6)</td></tr><tr><td>Transport</td><td>(9.8, 5.7, 7.0)</td><td>(3.9, 0.4, 1.8)</td></tr><tr><td>Buildings</td><td>n.a.</td><td>n.a.</td></tr><tr><td>Agriculture</td><td>(5.2, 5.2, 5.3)</td><td>(6.4, 3.8, 4.5)</td></tr><tr><td>Waste</td><td>(1.0, 1.0, 1.0)</td><td>(0.5, 0.3, 0.3)</td></tr><tr><td>LULUCF</td><td>(-16.5, -18.3, -11.6)</td><td>(-25.6, -40,-16.4)</td></tr></table>Notes: (1) values in parenthesis refer to WEM, continuous growth and saving scenarios, respectively. (2) Projected emissions in agriculture do not match with figures in the LTS's annex. (3) Some of the values based on graphs.</td></tr>
<tr><td>Renewable Energy Sources</td><td>Modelling results:
Share of renewables in gross final energy consumption in 2050:
64%, 80%, 78%
(i.e. WEM, continuous growth and savings scenarios. respectively)</td><td>Main drivers and features:
• In the low emission scenario, the renewable energy proportion of energy supply will be 55% by 2030 and almost 80% by 2050.
• In the low emission scenario, energy from solar power is projected to increase to 25-27 TWh and from wind power to 27-33 TWh.
• No information on renewables' shares by sector.</td></tr>
<tr><td>Energy Efficiency</td><td>Modelling results[1]:
FEC: 20.2 Mtoe in 2050 (i.e. 16% reduction to 2005 under the low emission scenario[2])</td><td>Main drivers and features:
• Electrification in heat production.
• Focus on building repair strategy.</td></tr>
</table>

[1] Figures for energy efficiency are taken from graphs.

[2] Calculation based on data in the LTS supplemented, as required, with data from other Member State reporting under the EU Regulation on Governance of the Energy Union and Climate Action.

Metric	Value	Further information
	PEC: 28.9 Mtoe in 2050 (i.e. 14% reduction to 2005 under the low emission scenario[2])	• Replacing the use of coke with hydrogen or electrolytic process in still reduction. • No information about energy consumed by sectors of end users.
Estimated investment needs	Total investment needs will exceed EUR 100 billion over the period 2020-2050	• Estimated investment needs in energy system (EUR 20 billion), building repairs (EUR 24 billion) and research and product development (EUR 35 billion) over the period 2020-2050. • Energy system estimates exclude necessary investments in electricity networks and renewable processes in energy-intensive industries. • Investment needs are additional to the WEM scenario, apart for buildings, where energy efficiency measures are part of WEM.
Socio-economic impacts of transition	GDP in 2050: 1.6% and 6.1% increase vs. WEM under the saving and the continuous growth scenarios, respectively. Employment in 2050: 0.1% increase vs. WEM under the saving scenario and 1.2 % decrease under the continuous growth scenario.	• Slightly positive impact on GDP and employment already in 2035 under low emission scenarios. • Employment is sensitive to reduction of arable lands (e.g. under the continuous growth scenario). • Environmental taxation is lower in the 'saving' than in the 'continuous growth' scenario, because of the increased use of domestic biofuels. • Overall, model results show that welfare improves in a low-carbon or carbon-neutral scenario.
Adaptation Policies and Measures	Limited	• The LTS refers to the National Adaptation Plan and its goals for 2022. However, there is no information in the LTS on adaptation policies and measures for the period 2022 – 2050.
Public consultation	Yes	• An online public consultation took place in March 2020. The results are presented in the LTS.
Legal status of the LTS and targets	No	• There is currently no law that includes the 'carbon neutrality by 2035' goal of the LTS. However, the LTS indicates that the Climate Act (609/2015) will be updated to achieve this target.

Overall completeness of the LTS

- The LTS defines a clear goal for Finland, aiming to be climate neutral by 2035, although it is not specified if the target includes international bunkers.
- In general, the strategy is developed in detail and projections have been completed up to 2050, including milestones for 2030, 2040 and 2050.
- The LTS includes most of the mandatory contents. Gaps in mandatory elements are:
    a) CO_2 intensity of GDP;
    b) Emission reductions in buildings;
    c) Strategies for related research, development and innovation;
- The LTS includes most of the non-mandatory contents. However, the executive summary is missing and there are no information on emissions and energy sources by transport type.