

Guide to Climate and Energy Analysis

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1. INTRODUCTION

The recommendations in this guide have been prepared as an aid for local municipality specialists in the activities financed from the resources of the programme “Climate Change Mitigation and Adaption” of the European Economic Area grants 2014-2021 – for the preparation of energy and climate plans of local governments and for the analysis of related topics and for the better execution of reports on the use of grants. The purpose of the grant is to help set climate and energy policy goals at the local level and to support the preparation of local government’s energy and climate plans.

The purposeful activities and enthusiasm of local governments in assessing and mitigating climate risks, achieving energy efficiency and implementing the potential for the use of renewable energy are important contributions to achieving the goals of national energy and climate policy.

2. OBJECTIVES

When compiling local government’s energy and climate plans, Estonia’s future climate scenarios until 2100¹ and national development plans must be considered, including the basics of climate policy until 2050 (KPP2050)², national energy and climate plan until 2030 (REKK2030)³ and climate change adaptation development plan until 2030 (KOHAK2030)⁴, and the objectives set out therein. The main national objectives in the field of energy and climate are:

- the reduction of Estonian greenhouse gas emissions by 80% by 2050 (incl. by 70% by 2030) compared to 1990;

¹ https://www.envir.ee/sites/default/files/kliimastenaariumid_kaur_aruanne_ver190815.pdf.

² <https://www.envir.ee/et/eesmargid-tegevused/kliima/kliimapoliitika-pohialused-aastani-2050-0>.

³ <https://pilv.mkm.ee/s/VEvaKrL3Avopw5x>.

⁴ <https://www.envir.ee/et/eesmargid-tegevused/kliima/eesi-tegevused/kliimamuutustega-kohanemise-arengukava>.

- in the sectors covered by the Effort Sharing Regulation (transport, small energetics, agriculture, waste management, forestry, industry) to reduce greenhouse gas emissions by 13% by 2030 compared to 2005;
- increasing the readiness and capacity of the Estonian state, regional, and local levels to adapt to the effects of climate change;
- the share of renewable energy in total final energy consumption must be at least 42% in 2030;
- final energy consumption must remain at 32–33 TWh per year until 2030;
- more efficient use of primary energy consumption – reduction of primary energy consumption by up to 14% (compared to the peak of recent years) by 2030;
- comprehensive reconstruction of the building fund built before 2000 by 2050⁵;
- ensuring energy security by keeping dependence on imported energy as low as possible;
- meeting minimum criteria for interconnection of transnational electricity networks;
- the use of R&D and innovation in measures to maintain the competitiveness of the economy.

3. AREAS COVERED

The guide does not provide a specific framework or format for the systematic description of climate and energy issues, but helps to identify areas related to climate change adaptation⁶ and mitigation⁷ on local government territories, necessary sectoral actions and developments, i.e. to perform local climate and energy analysis and audits. The potential risks and opportunities associated with the effects of climate change are thoroughly considered, thus helping local governments to make long-term strategic knowledge-based decisions. This, in turn, allows the quality of life and living environment of people living in the area administered by the local government to be maintained or even improved. In addition, the local governments are considering their own options for contributing to the mitigation of the effects of climate change.

Local governments are of very different sizes, locations, and climate risks, and therefore the preparation of local government energy and climate plans is flexible. Climate change adaptation and mitigation issues may be treated as a separate independent document – as local government energy and climate plans – or they may be integrated into existing and/or strategic documents to be developed (including plans) of local governments.

This means that each local government energy and climate plan will deal more thoroughly with the relevant aspects of a particular local government region, taking into account the areas listed below:

- health, social welfare, and rescue capacity;
- land use and planning;
- natural environment;

⁵ Long-term strategy for the reconstruction of buildings

https://ec.europa.eu/energy/sites/ener/files/documents/ee_ltrs_2020.pdf.

⁶ Adaptation to climate change – mitigation of risks posed by climate change in order to increase the preparedness and resilience of both society and ecosystems to climate change (e.g.: activities to limit the spread of invasive alien species, increase rescue capacity, mitigation of flood risks, etc.).

⁷ Climate change mitigation – activities aimed at reducing the speed and impact of climate change. Mainly reducing greenhouse gas emissions and capturing CO₂ naturally or technologically (e.g. energy-efficient building fund, business and transport development, reducing the use of fossil fuels, and exploiting the potential of renewable energy sources, planting trees, etc.).

- economy, including green public procurements⁸ and circular economy;
- bioeconomy;
- community, awareness, and cooperation;
- infrastructure and buildings;
- energy and security of supply.

4. STEPS FOR UPGRADING DEVELOPMENT PLANS AND/OR PREPARATION OF ENERGY AND CLIMATE PLANS

The recommended first steps for taking climate issues into consideration for local governments are as follows.

- 1) To map the current situation – to highlight in each area which climate risks⁹ affect local governments, what the local government's ability to mitigate climate change are, how local governments can contribute to adapting to the effects of climate change, which existing and valid local government development documents have taken into account the climate topic and which strategy papers are planned. The local government should also map the positive effects of climate change and the opportunities that arise from them.
- 2) To highlight relevant activities in the field of energy and climate implemented and planned by local governments in each area to date. To this end, local governments should identify activities that have already been carried out in each area and still need to be implemented in order to mitigate the effects of climate change in the local government and how adaptation to the effects of climate change would be as smooth as possible for local governments, businesses, and residents.
- 3) To set a fixed term (year by year) and comparable targets for adapting to climate change and reducing greenhouse gas (GHG) emissions (including energy saving targets). To describe the activities planned by local governments in a more general / long-term vision and in detail, by specific actions and measures.
- 4) To specify the indicators to monitor compliance with the targets set, such as: final energy consumption, primary energy consumption, renewable energy capacities and output, renewable energy consumption, local governments' share of energy-efficient buildings, greenhouse gas emissions, as well as, for example, the number of climate change training courses for local government employees, information campaigns for risk groups, etc.

Table 1 is helpful to the local government in analysing whether or not the risks and benefits of climate change are already considered in the activities of the local government, and directs the local government to consider issues affected by climate change, both in the area of adaptation and mitigation. The list is not exhaustive and, depending on the specificity of the local government, there may be climate change-related activities in the local government not listed below. In addition, due to the specific nature of local governments, not all the statements listed in the table may apply to all local governments.

⁸ <https://www.envir.ee/et/keskkonnahoidlikud-riigihanked>.

⁹ Risk of climate change affecting natural and artificial systems and regions.
https://en.wikipedia.org/wiki/Climate_risk.

Instructions and diagram for using the table:

The table shows the statements that need attention for each area and which the local government may answer 'Yes' or 'No' to.

If the answer is 'Yes', the local government should describe how (by what actions) this statement is currently being implemented and what are the plans for the future (what actions and measures are planned to be applied).

If the answer is 'No', the local government should first consider whether the statement is necessary/applicable to that specific local government. If the statement is phrased as necessary/applicable to this local government and they already have future activities planned on the same subject, they should be designed in the local government energy and climate plan (planned activities/measures). If the argument is relevant to that local government, but there are obstacles or the subject matter is not formulated in the statement, it is necessary for a local government to analyse the obstacles, as well as the possibilities for dealing with the subject in the future. Then the local government will describe why it is not possible to do so.

Diagram 1

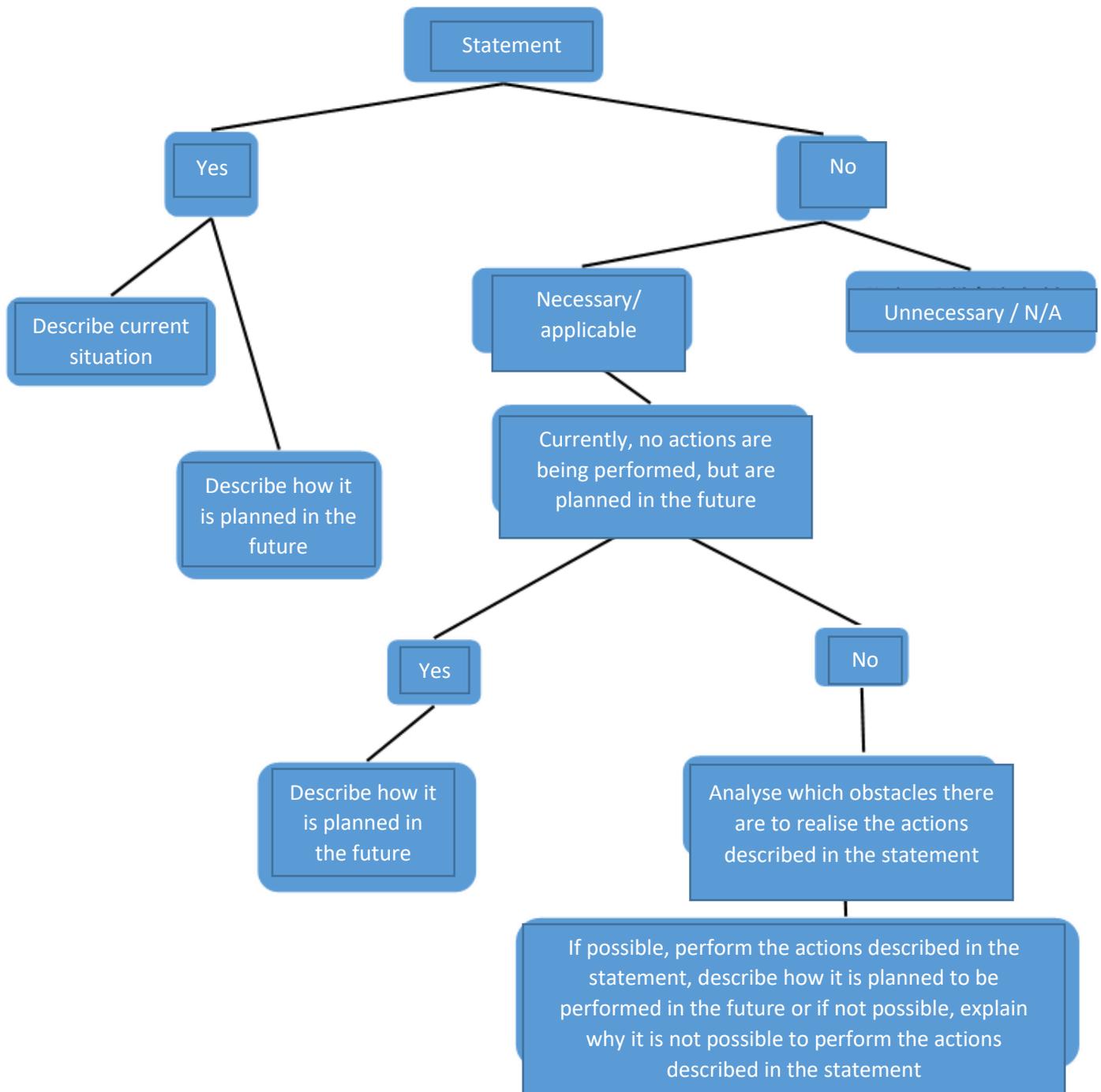


Table 1

Fields	Statement
<p>Health, social welfare, and rescue capacity: people are able to protect their health and property, the rescue capacity is at a good level, and the potential impact of climate change on health and quality of life is minimised.</p>	<ul style="list-style-type: none"> - The local government is operating under the plan, in the case of extreme weather¹⁰, support for responsible authorities has been effectively organised, e.g. in dealing with heavy rain- and snowfalls , and floods. - Extreme low temperatures and frequent melting-freezing cycles and slippery sidewalks and roads are taken into account. Rapid and effective measures to reduce the slippery surfaces have been introduced. - Opportunities to ensure clean drinking water during heatwaves are created. - Buildings have sufficient insulation and heating systems are in order, reliable, and resistant to low temperatures. - Local government’s rescue capacity (e.g. waterpoints, evacuation points) is at a good level. A guaranteed preparedness to respond quickly to support the responsible authority in unusual situations due to extreme weather events. - Health risk groups have sufficient knowledge to cope with extreme weather conditions. For example, hot and cold waves. - Primary medical care is sufficiently available. - Social workers and persons providing social services have the knowledge of how to respond and assist those in need in the event of extreme weather, and local government has identified those people who may need assistance in extreme circumstances. - The provision of emergency social assistance is sufficiently planned and guaranteed.¹¹
<p>Land use and planning: risk of storms, flooding, and erosion has been mitigated, the heat island effect^{12 13}</p>	<ul style="list-style-type: none"> - Local government’s planning and construction specialists have sufficient

¹⁰ https://www.ilmateenistus.ee/wp-content/uploads/2013/01/Ilmariskid_teatmevihik.pdf.

¹¹ Social Welfare Act: <https://www.riigiteataja.ee/en/eli/530042020007/consolide>.

¹² Heat island – an urban area which is significantly warmer than the surrounding areas due to human activity. <https://www.nationalgeographic.org/encyclopedia/urban-heat-island/>.

¹³ The effect of heat islands is due to the fact that in cities, asphalt, concrete, and pitched house roofs absorb sunlight much more intensely than natural surfaces and have higher air temperatures above them. The effect

Fields	Statement
<p>has been mitigated, the climate security of the settlement has been increased by choosing the best solutions for land use and planning.</p>	<p>competence to take the climate topic into account in their daily work.</p> <ul style="list-style-type: none"> - If there are areas in the local governance area where flooding is present, the risks in these areas must be mitigated as a result of flooding. Flood management uses, inter alia, ‘nature-based’ solutions (ditches, ponds, absorption fields, etc.). - It has been assessed the areas at risk of heat island effect and how many are in the local governance area. It has been assessed how many green areas, landscaping, water bodies and how they are located to mitigate the heat island effect. There is a plan to mitigate or prevent the occurrence of the heat island effect. - The renovation of existing municipal buildings and the planning of access facilities and roads for new buildings are based on the efficiency of the building and mobility as a whole. - Property owners under the administration of the local government are aware of the climate risks that affect them. Relevant information on climate risks shall be freely available. - Local plans consider the impact of climate change and the risks involved. - It has been assessed how many areas with man-made environmental damage are in the local governance administration¹⁴ and whether the local government can contribute to managing of such areas. - The local government has provided for the planning of land use related to the production of renewable energy, including in comprehensive plans.
<p>Natural environment: In the changing climate, there have been considered the provision of species, habitat and landscape diversity, the favourable status and integrity of land and aquatic ecosystems and the provision of socio-economically essential ecosystem services of sufficient size and quality.</p>	<ul style="list-style-type: none"> - It has been assessed how many natural areas with man-made environmental damage are in the local governance administration and whether the local government can contribute to restoring the natural balance of such areas. - The local government has an overview of how many different habitats exist on its

of heat island in densely populated areas is exacerbated by heat waves, which are particularly dangerous to chronic patients, toddlers, and the elderly, among whom morbidity and mortality are increasing.

¹⁴ Environmental Liability Act: <https://www.riigiteataja.ee/en/eli/529102020005/consolide>.

Fields	Statement
	<p>territory^{15 16}, including which ones are rare and/or endangered. In addition, the local government knows how many species of which habitats must be kept and protected in order to preserve biodiversity.</p> <ul style="list-style-type: none"> - The local government has analysed whether it is possible to work with neighbouring or close municipalities to restore the natural environment in order to reduce administrative burdens and share best experiences. - The local government has taken measures to control alien species on its territory.
<p>Economy: economic subjects best manage the opportunities and risks of climate change.</p>	<ul style="list-style-type: none"> - The local government has assessed the change in the business environment in its region in the future (after 15 and 30 years) due to the effects of climate change. For example, the increase in the share of summer tourism and the decline in the share of winter tourism in the region. In addition, it has evaluated the possibilities for local government to guide the business environment in the long term (in 30 years). - Operators active in the local governance area have been informed of the risks posed by climate change in the region. - Local governments take into consideration the principles of green public procurement. - The local government is aware of the principles of the circular economy and is able to guide its community to implement these principles. - The climate-related risks have been assessed on the basis of¹⁷ households under the local governance administration and appropriate measures are planned to mitigate them.
<p>Bioeconomy Promoting the sustainability of the bioeconomy sectors that are important to Estonia in the field, forest, water, fish and recreational economy, as well as in the extraction of peat, which takes into account the effects of climate change.</p>	<ul style="list-style-type: none"> - It has been estimated how much active and potential arable land and forest is available and how much water, fishing and peat production are in the territory of a local government. There is a knowledge of the level of employment in these sectors at

¹⁵ <https://www.keskkonnaagentuur.ee/et/e-teenused/eesti-riikliku-bioloogilise-mitmekesisuse-teabevorgustiku-koduleht/bioloogiline-0>

¹⁶ <http://www.eelis.ee/>

¹⁷ <https://www.eestipank.ee/majapidamine>

Fields	Statement
	<p>local level. It is set forth to mitigate the risks of climate change in the above sectors.</p> <ul style="list-style-type: none"> - The potential positive changes to the bioeconomy in the local governance administration have been analysed due to climate change. - The number of local farmers is known. In order to reduce the exhaust gases from the transport of products, the marketing of local products to local people should be encouraged.¹⁸ - The use of bioenergy resources is planned or implemented.
<p>Community, awareness and cooperation: awareness of the risks and opportunities of climate change has increased.</p>	<ul style="list-style-type: none"> - The effects of climate change on the most vulnerable groups in the local governance community have been assessed. - Measures to reduce vulnerability to the effects of climate change on the most vulnerable groups are planned. - It has been addressed at local governance level to raise people's risk awareness and provide guidance on how to behave in a crisis situation. - Risk management has been enhanced and the awareness and competence of local governance officials and staff about the risks and opportunities associated with climate change has been enhanced in order to contribute to climate change mitigation and adaptation. - The social impact of the economic reorganisation due to climate change mitigation has been assessed on the people living in the territory of a local government. Measures to manage these risks are prepared. - The local government is in the role of a guide – environmentally friendly type of movement (using bicycles, scooters, electric cars for official duties), energy efficient buildings, introduction of circular economy principles in the local government, etc.) - Via educational institutions, youth centres and centres of interest managed by local

¹⁸ Buying local raw materials and products should be more convenient for people than going to a supermarket. For example, Luunja cucumbers, which had a much higher price in Tartu in the winter of 2019 than in, for instance, Latvia.

Fields	Statement
	governments, awareness-raising is directed towards climate change and the circular economy.
<p>Infrastructure and buildings: the effects of climate change have not reduced access to vital services nor the energy efficiency of buildings.</p>	<ul style="list-style-type: none"> - The durability of buildings and facilities to extreme weather conditions (insulation of buildings, reliability, durability, , and efficiency of buildings, heating, cooling and ventilation systems) belonging to local governments is ensured. - An energy audit has been performed on the buildings managed by local government, which is the result of the planned reconstruction of buildings (including upgrading the automation of the building to manage the specific costs) - The local government uses as energy-efficient solutions as possible in the reconstruction of buildings and the construction of new buildings. - Cooperation has been made with providers of vital services, including access to communications services, i.e. ensuring access and continuity of routes as soon as possible for ambulances, rescue teams, the availability of a local food shop and food supplies, the reliability and durability of water systems, in order to improve the continuity and availability of these services in the area. They have improved their preparedness for any disruption of vital services. - The continuous development and custom-made development of the public transport network, the development of a low-carbon transport system, the promotion of light rail traffic is ensured. Cooperation with public transport centres is well-functioning.
<p>Energy and security of supply: the impact of climate change has not reduced energy independence, security, security of supply nor usability of renewable energy resources, nor does the volume of final consumption of primary energy increase.</p>	<ul style="list-style-type: none"> - The reliability and security of supply of heat systems is ensured (including the fact that the pipes are modern). District heating equipment is energy efficient. - The local heaters of the buildings managed by local government are up-to-date and energy efficient. - In cooperation with electricity companies, the reliability and security of supply of electrical systems is ensured.

Fields	Statement
	<ul style="list-style-type: none"> - The local government unit's readiness for power outages or equipment disruptions has been increased. - The opportunities to increase the share of renewable energy resources have been analysed. - The comprehensive plans set forth land use related to renewable energy (e.g. solar panels, wind farms, biogas plants, hydrogen, etc.). - The local government uses renewable energy solutions (including valued potential) in energy consumption and production and has an overview of existing renewable energy companies in local government. - The necessary line backups related to the ensured network and the future renewable energy solutions have been identified and accounted for. - Cooperation has been made with renewable energy companies in finding a wide range of solutions, including crisis management, solutions/potential for energy storage, increasing security of supply. - The energy community is active and is successful or its preparation is underway. - Energy management and efficiency measures are planned or implemented. - Street lighting system has been updated. - Electronic and digital data capture of the local government unit is managed and is being used to reduce digital waste.

6. ADDITIONAL RECOMMENDATIONS

- If climate change mitigation and/or adaptation requires the transfer, redundancy, etc. of the employees, it must be done fairly. This means that workers must be ensured social guarantees for coping, retraining opportunities, new and high-quality jobs, etc. Local government can contribute to this by directing the activities of businesses in cooperation with the Unemployment Insurance Fund and educational institutions who organise training and/or retraining in the community or in its vicinity.

- Joining voluntary climate and/or energy initiatives, such as the Covenant of Mayors for Climate and Energy¹⁹, the Smart City Pilot Programme²⁰, the EU Initiative for 100 Climate-Neutral Cities by 2030²¹, should be highlighted.
- As local governments are of very different sizes, locations and climate risks, the preparation of local government energy and climate plans should be flexible. This means that each local government's energy and climate plan will deal more thoroughly with aspects in their region.
- When local governments prepare an inventory of GHG emissions in their region, it should be prepared on a common basis with a nationally applied inventory methodology (IPCC guidelines)²² and, where possible, outline specific steps to reduce emissions.
- It is necessary to analyse throughout whether the sustainable development goals have been adequately taken into account and that development documents are aligned with these objectives²³. Important attention must be paid to the following objectives of sustainable development:
 - Objective No. 3: to ensure good health and well-being for all age groups;
 - Objective No. 6: to ensure drinking water and sanitation for all and sustainable management of water resources;
 - Objective No. 7: to ensure affordable, reliable, sustainable and modern energy access for all;
 - Objective No. 8: to support viable, inclusive and sustainable economic development and to ensure decent work for all people;
 - Objective No. 9: to build durable infrastructure, support inclusive and sustainable industrialisation and innovation;
 - Objective No. 10: to reduce inequalities both inside and between countries;
 - Objective No. 12: to ensure sustainable consumption and production;
 - Objective No. 13: to take urgent action to combat climate change and its impact;
 - Objective No. 15: to protect and restore terrestrial ecosystems and promote their feasible use; to manage forests sustainably, to combat desertification and to reverse soil degradation and biodiversity loss.

¹⁹ http://dev.eumayors.eu/about/covenant-of-mayors_et.html.

²⁰ <https://www.taltech.ee/tarklenn>.

²¹ https://ec.europa.eu/jrc/communities/sites/jrccties/files/100_climate_neutral_cities_report_.pdf.

²² <https://www.ipcc-nggip.iges.or.jp/public/2019rf/index.html>.

²³ <https://www.kysk.ee/failid/Upload/files/S%C3%A4%C3%A4stava%20arengu%20eesm%C3%A4rgid%20Kogemu sp%C3%A4eval%281%29.pdf>.