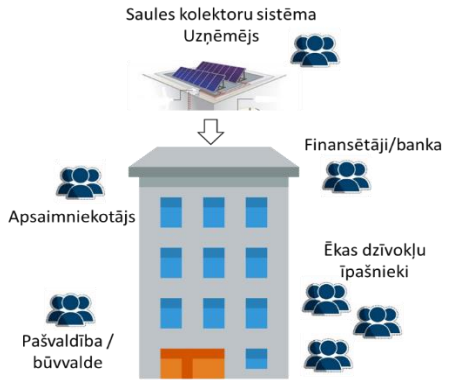
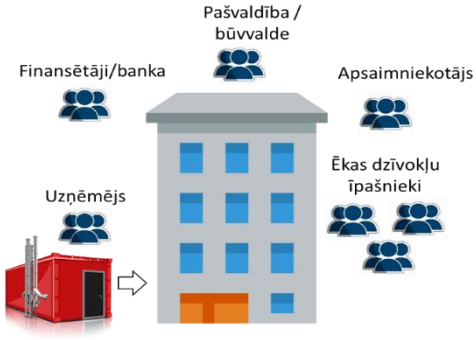
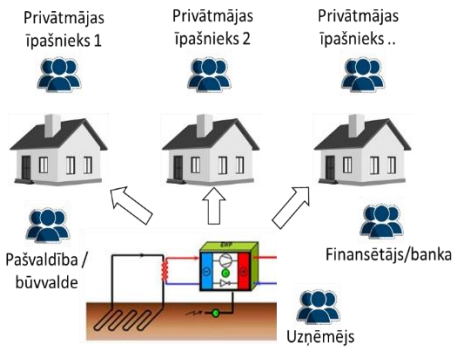
Co2mmunity Partners in Latvia Elaborate the Assessment of Technical, Economic and Legal Frameworks for the Implementation of Renewable Energy Community Projects

In order to support the newly established citizen-driven RENCOP in Mārupe municipality, in the end of 2019, Riga Planning Region contracted external energy experts to carry out a research on the existing situation in the municipality of Mārupe from the perspectives of renewable energy and energy efficiency. A significant part of the study focuses on the technical, financial and legal potentials for community energy projects in Latvia. The results of the research, including information on technical parameters and cost-benefit analysis, have already been forwarded to the local communities and other important stakeholders, including the national ministries responsible for energy and climate change mitigation policies to allow for a new round of debate on renewable energy communities in Latvia.

Three practical examples of community energy projects were examined in detail in an attempt to search for the most suitable technical and economic solutions, as well as the legal form. All pilots imply multilateral cooperation between local residents, municipality and external consultants. It was assumed that residents would champion the project and energy consultants and municipal experts would provide guidance and expertise. It was also assumed that all three projects would be financed from bank loans, provided that the interest and inflation rates remained at 2019 levels.

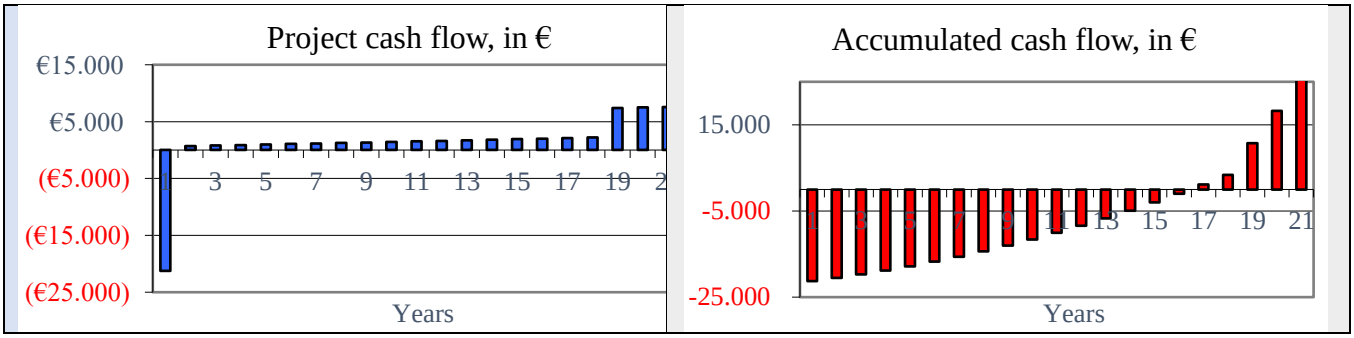
	1) <u>Rooftop solar collectors for an apartment building in Mārupe</u> - usable area of 1,900 m^2, 30 apartments - technical solution – installation of rooftop solar collectors (20 KW) for the production of hot water - energy source – solar energy - pilot project run by households in cooperation with the local municipality, home maintenance company and a financial services company.
	2) <u>Steam boiler container for an apartment building in Mārupe</u> - usable area of 1,900 m^2, 30 apartments - technical solution – installation of container steam boiler system (200 kW) - energy source – wood pellets - pilot project run by households in cooperation with energy service company, local municipality and a financial services company

	3) <u>Ground-source heat pump for detached private houses in Mārupe</u> - 4 to 10 private single-family houses, usable area of each house 160m^2, average energy consumption per house 80 kWh/m^2 a year - technical solution - installation of a ground-source heat pump system (bore depth 60 metres, vertical) - pilot project run by an energy service company in cooperation with homeowners, local municipality and a financial services company

The results of the analyses were summarised in both advanced cost-benefit calculations and simple SWOT matrices to illustrate the advantages and disadvantages of each solution.

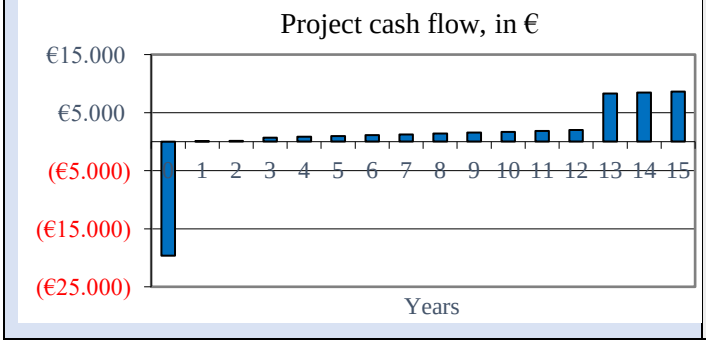
Case 1. SWOT analysis - Rooftop solar collectors for an apartment building in Mārupe

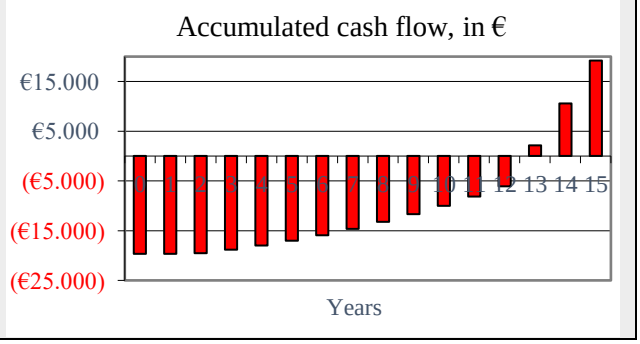
PROS	**CONS**
▪ Heat energy from renewable energy sources ▪ Possibility to reduce energy consumption prices and reduce risks associated with rising energy prices	▪ The amount of energy produced and therefore the time of return on investment depends on weather conditions ▪ High initial amount of investment, slow return on investment ▪ The equipment of the collector and hot water system needs to be monitored and maintained
OPPORTUNITIES	**RISKS**
▪ It is possible to attract co-financing from the EU funds and other financial assistance instruments ▪ Heat energy costs are less dependent on central heating or natural gas tariffs ▪ The project can be carried out in cooperation with the energy services company, thus reducing the risks associated with the operation and maintenance of equipment, as well as the financial risks ▪ Allows to become more energy-independent in case there is a failure in the centralised system	▪ Property damage or risk of liability caused by inappropriate installation (mistakes) ▪ Risks related to the viability of the project, such risks associated with inadequate maintenance, technical skills, financial justification ▪ Insufficient funding ▪ Risks associated with increased production costs or changes in energy tariffs ▪ Risks associated with changes in energy policies that may affect the cost-efficiency of the project ▪ Generated amount of energy depends on the intensity of solar radiation



Case 2. SWOT analysis - Steam boiler container for an apartment building in Mārupe

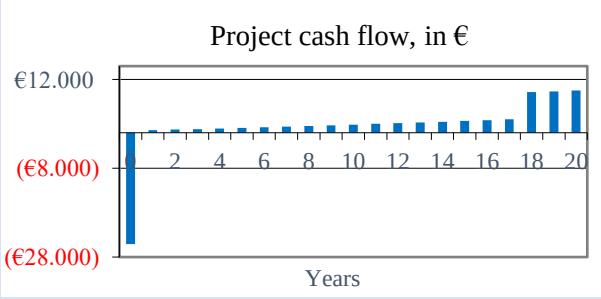
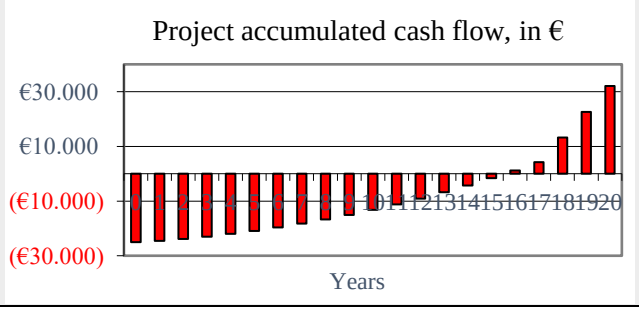
PROS	CONS
▪ Higher proportion of renewable energy source ▪ Independent heat energy production ▪ High efficiency of boiler room ▪ Possible reduction in energy costs ▪ Reduced amount of lost energy ▪ Higher energy efficiency of the system	▪ Higher staff costs ▪ Higher specific production costs ▪ Requires regular cleaning and monitoring of boiler
OPPORTUNITIES	**RISKS**
▪ It is possible to attract co-financing from the EU funds and other financial assistance instruments ▪ Technological improvement and modernisation	▪ Rising pellet prices ▪ Decreasing efficiency over time ▪ Decreasing purchasing power of consumers ▪ Shortage of qualified staff ▪ Increasing maintenance costs





Case 3. SWOT analysis - Ground-source heat pump for detached private houses in Mārupe

PROS	CONS
▪ Higher energy efficiency of the overall system ▪ Environmentally friendly solution as no air pollution is created during the production of heat energy	▪ High costs, support is required from state or local government

OPPORTUNITIES	RISKS
▪ Decreased heat energy tariff ▪ Energy-independent solution, separate from centralized heat supply networks ▪ Decrease in the volume of GHG emissions ▪ Energy generated from renewable energy sources	▪ Limited amount of options to attract co-financing ▪ Heat pump compressors are sensitive to fluctuation of system pressure
	

Major Conclusions

Given the lack of a sound policy on investment in renewable resource projects and the absence of long-term and low-interest investment financing (support) schemes in Latvia, significant challenges still exist that prevent renewable energy community projects from becoming economically competitive with projects that rely on fossil energy in Latvia.

To facilitate higher level of acceptance of renewable energy community projects, it is crucial that the central government and local municipalities develop a favourable framework and initiate certain support measures, either financial or indirect. Although local communities generally positively regard introduction of green energy solutions in Latvia, their purchasing power is still considerably lower that in some more economically advances Baltic Sea Region countries, which leads to situations where economic considerations still prevail over environmental concerns.

Fortunately, the Ministry of Economics of Latvia is currently transposing the respective EU directives and the Government has just approved the National Energy and Climate plan for Latvia until 2030. One of the most important activities listed in the Plan directly encourages the introduction of renewable energy communities in Latvia: "*The goal is to promote economically justified energy self-generating, self-consuming and renewable energy communities and promote the creation of legal regulation and support mechanisms for energy cooperatives in Latvia*". The National Energy and Climate Plan also proposes the establishment of a Renewable Energy Promotion and Energy Efficiency Improvement Fund.

The need for support to community energy projects is also highlighted by the above analysis. Depending on assumptions, all there pilot projects in Mārupe would require financial support to become economically viable and competitive. The necessary support intensity varied from 14 per cent in the case of the steam boiler container pilot project to 25% in case of ground-source heat pump for detached private houses and as much as 50% in case of the solar collectors. This implies that renewable energy

solutions are still less competitive at locations where natural gas infrastructure (gas network at immediate proximity) is available. The green solutions become more competitive and economically feasible at locations with lower building and population densities – in suburban areas or at smaller country villages.

For additional information on Co2mmunity activities in Latvia, please contact the project administrative coordinator at Riga Planning Region Ilgvars Francis (ilgvars.francis@rpr.gov.lv)

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