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Investment needs to meet 2030 energy and climate targets of Latvia

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Abstract

This report is part of the CIC2030 (Climate investment capacity 2030) project to assess information on the amount of investment required to meet the 2030 energy and climate goals of Latvia. This report is a follow-up to the report mapping the investments in energy efficiency and renewable energy projects in Latvia in 2018 (Kamender A., Rochas C., Novikova. A., "Investments in Energy Efficiency and Renewable Energy Projects in Latvia 2018", Riga Technical University (RTU), November 2019.) [1] The report reviews existing studies developed for the country, assesses their modeling and assessment methodologies, and compares their results with the current level of investment.

Briefly on CIC2030

Pursuant to the Regulation of the European Parliament and of the Council on the Governance of the Energy Union, each Member States shall prepare a national energy and climate plan for the period of 2021-2030, setting out the new energy and climate targets. In order to achieve the energy and climate targets, targeted policies, as well as investments from the EU, national, local and private level are needed to allow the implementation of new energy efficiency and renewable energy projects.

Under the CIC2030 project and in cooperation with policy makers, scientists from the Riga Technical University, the Czech Technical University in Prague and the Institute for Climate Protection, Energy and Mobility collaborated to examine the adequacy of funding for the achievement of the energy and climate goals. The overall objective of the project CIC2030 study was to identify the investment amount, the potential sources of funding and the financial instruments necessary to achieve the energy and climate targets by 2030. This is the second study under the project CIC2030 aimed at assessing investment need into energy efficiency and renewable energy projects.

Disclaimer

The present CIC2030 project is part of the European Climate Initiative (EUKI – www.euki.de). The EUKI is a project financing instrument by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety. It is the overarching goal of the EUKI to foster climate cooperation within the European Union and reduce greenhouse gas emissions.

The findings referred to in this report express solely the opinion of the authors and do not reflect the views of the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety.

For more information and feedback on the report

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[1] https://videszinatne.rtu.lv/wp-content/uploads/2019/12/Klimata_investiciju_karte_Latvia_2019_LV_pub_compressed.pdf

Executive Summary

The fulfilment of Latvia's energy and climate policy objectives is also a major issue of sufficiently large, independent and efficient investments in sustainable energy and climate projects. In order to achieve the objectives of the energy and climate plan 2021-2030 (NECP), it is necessary to ensure a transparent and sufficient amount of investment in renewal of buildings, upgrading production plants, increasing the use of renewable energy resources and making sufficient investment in science by developing new technologies, developing sustainable mobility solutions and farming practices.

The report deals with the question "How to assess the amount of investment needed to meet the energy and climate objectives?". This report continues work on climate investment mapping energy efficiency (EE) and renewable energy resources (RES) projects in Latvia in the report "Investments in energy efficiency and renewable energy projects in Latvia in 2018, Riga Technical University (RTU), December 2019." Assessments of the necessary investments are essential to take long-term investment-related decisions in both the public and private sectors.

After the introduction, Chapter 2 gives an insight into the analytical framework of the study and looks at the existing methods for evaluating investments in energy and climate projects. The third chapter deals with modelling tools and modelling approaches that are used to analyse the amount of investment needed to achieve energy and climate objectives, the factors that influence their results, constraints and assumptions that influence results. In Chapter 4, we then turn to Latvia's energy and climate objectives and look at the studies that have been carried out so far. In the fifth chapter, we will look in depth at two important sectors for the energy efficiency of buildings (section 5.1) and renewable energy sources (section 5.2).

In order to make it possible to use the results of modelling, which, in our case, is an investment assessment for energy and climate objectives, it is important to understand the design of the models themselves, the necessary exit data and assumptions affecting the results. Few studies have been carried out in Latvia to address the amount of investments needed to meet the 2030 targets, the models used, the output data, the assumptions made and their impact on the results.

According to assessment of NECP, energy efficiency, renewable energy and other climate projects will need to invest around EUR 8.2 billion by 2030. Some studies say it requires EUR 5.5 billion over the next ten years, depending on the likely development scenario. As additional sources of funding, the real estate tax, depending on energy consumption, the energy consumption tax or the additional energy resource fee is considered [A.Blumberg]. These differences are mainly related to the measures included in the scenarios, the input data used, the assumptions made, and the methods used. It is also very important in what way the interaction between measures is taken into account. For example, the Blumberg study highlights that if one of the measures mentioned in the scenarios is not implemented or partially implemented, it significantly reduces the possibility that the target will be achieved. It is also important to separate additional investments from investments that would be made regardless of the objectives set up, such as the maintenance of energy infrastructure, the construction of new cables, etc. Individual studies account for all total investments, including investments that would be made independently of climate and energy objectives, while other studies only look at additional investments. NECP 2030 covers all total planned investments.

The output data and assumptions used in the calculation models, as examples of which we can mention assumptions about energy and technology price change forecasts, macroeconomic, energy consumption and population change forecasts used in the models, can have a very significant impact on final results. Also relevant assumptions related to the costs or costs of CO2 emissions related to environmental impacts and the application of these costs to certain energy sources.

It is also important to understand what is included in each of the scenarios examined and which is adopted as a base case (business as usual or reference scenario). It is also necessary to take into account or deal with all the total costs of the project or the eligible costs, which may be directly attributed to the achievement of the energy and climate objectives.

For example, in some studies, only investments that can be directly attributed to a reduction in energy consumption, thus allowing a better estimate of the amount of costs that directly enable energy efficiency targets to be achieved, while other studies use all total project investments, which in turn are useful for funders and project developers to understand with someone investment in general must take into account projects that have been carried out.

The design of the models themselves and their level of detail are also essential. For example, most macroeconomic models often lack the necessary level of detail to analyse individual sectors or individual policy measures as they generalise certain market laws and do not pay enough attention to the energy system itself, its players and their behaviour. These, for example, macroeconomic models, often form the energy balance according to the most cost-effective scenario, based on the most cost-effective solution in each calculation step, without taking into account the asymmetry of information on the market and delays related to the behaviour of market participants, the availability of financing, the capacity of construction and other factors, that have a significant impact on the ability to implement certain measures, to invest and achieve certain results. For example, even if the use of solar or wind energy becomes the most cost-effective solution for electricity generation, the increase in capacity they have installed may not be sufficiently rapid as predicted by macroeconomic models, as different barriers (lack of investment, lack of knowledge and technology, population resistance, etc.).

On the other hand, cost-replacement curves, which are often used to find cost-optimal solutions and are simple and widely used instruments, do not necessarily take into account other measures that are not directly linked to changes in certain energy supply technologies or changes in their efficiency. In Latvia, for example, the agricultural sector accounts for about 4% of GDP, but it is responsible for 23.6% of total greenhouse gas emissions in 2016.

In view of the results obtained, it can be concluded that in 2018 at least EUR 190 million were invested in energy efficiency measures for buildings and businesses, while the investment of EUR 41 million (including EUR 21.1 million invested in Daugava HES) amounted to EUR 231 million.

In line with the objectives of the National Energy and Climate Plan, energy efficiency and renewable measures would need to invest around EUR 445 million annually over the next 10 years, which is twice as much as it was invested in 2018.

To date, EU funds have played a key role in the financing of climate projects, which has mainly been used in the form of grants when investing in public and municipal building renovation projects. In view of the large share of grants, private investment in 2018 has been relatively small, representing 29% of total investment, while investment by EU funds amounted to 42%, co-financing by public and local governments of 29%, including quota trading revenue.

When looking at the technologies and projects invested, it can be concluded that the main investment in the comprehensive renovation of buildings and the large majority of projects is related to the renovation of public and local government buildings (42% of total investments), while in the RES sector they have been bio-energy and heat replacement projects. There are very few projects involving energy generation from other renewable energy sources, energy storage or other innovative solutions. Energy efficiency projects are mainly related to building renovation, achieving minimum energy performance requirements, and very few are focused on achieving nearly zero levels of energy building or integrating RES technologies into buildings.

In order to be able to meet Latvia's climate and energy objectives, it is necessary to double the amount of investment in energy efficiency and renewable energy projects. Since almost all EU funds for energy and climate projects are used in the form of grants, investment in energy and climate projects is characterised by uneven nature and uncertainty. This could be avoided by creating own-initiative financial instruments dedicated to the development and financing of climate projects. The involvement of private investment is critical to meeting the 2030 targets.

Until now, there have been few studies in Latvia that have analysed the impact of energy and climate policy on energy and climate objectives, individual sectors of the economy, Latvia's energy supply balance and costs in general. According to the information provided, investment of EUR 8.2 billion will be needed over the next 10 years.

Estimates of investment needs depend on assumptions made during the modelling process. Some of them are more important than others, some are more controversial, and some may not be obvious given the complex modelling system that is required for calculations. Examples include price assumptions on fuel, technology, model borders, macroeconomic forecasts on economic growth and population.

It is important to understand modelled target scenarios, particularly those that are and are not included in the baseline scenario (i.e. core operations or cases that can be referred to), since investment needs, in addition to the reference case, are usually identified as additional costs. When comparing the different investment needs indicators, modelled policy scenarios should be assessed, but consideration should also be given to different deadlines (e.g. 2030 relative to 2050), year reference, indicators (e.g. incremental costs compared to full costs, which are particularly important for energy efficiency investments in the building sector) and sectorial scopes (e.g. investments in the renewable energy sector or in all sectors, including heating).