Evaluation of Climate Leap

ENVIRONMENTAL PROTECTION AGENCY

Orders
Ordertel: 08 – 505 933 40
E-mail: natur@cm.se
Postal address: ArkitektkopiAB, Box 110 93, 161 11 Bromma
Internet: www.naturvardsverket.se/publikationer

Environmental Protection Agency
Tel: 010 – 698 10 00
E-mail: registrator@naturvardsverket.se
Postal address: Swedish Environmental Protection Agency, 106 48 Stockholm
Internet: www.naturvardsverket.se

ISBN 978-91-620-0000-0
ISSN 0282-7298

Pressure: ArkitektkopiAB, Bromma 20
Cover:

Foreword

This report is drawn up as a basis for the Swedish Environmental Protection Agency's work to monitor and evaluate the aid 'Climate Leap' in accordance with the Ordinance (2015: 517) on aid for local climate investments. Commission Regulation (EU) No 651/2014 (the Block Exemption Regulation) requires the evaluation of aid schemes with an annual budget of more than EUR 150 million. The evaluation shall be carried out by an independent organisation with relevant methodological competence.

The Environmental Protection Agency has therefore, following a tendering process in which three consultancy companies submitted offers, commissioned WSP Sverige AB to carry out an evaluation. It is based on the evaluation questions set out in the Swedish plan for the evaluation of Climate Leap and also set out in the European Commission's decision to approve the evaluation plan. The mission was carried out in spring 2023 and focused on gathering new information and compiling previous evaluations. Information collection and analysis included examining the additional effects of the aid by means of surveys and market analyses. Some parts of the contract concern the whole of the investment aid Climate Leap, while others have been able to be implemented only for some more homogeneous types of measures benefiting from investment aid.

The report was prepared by Sirje Pädam (mission manager), Joel Berg, Per Strömberg and Jenny Wallström, WSP Sverige AB. Ronja Beijer Englund and Maria Noring, WSP Sverige AB, have also contributed expertise in the work. The authors are solely responsible for the content of the report, so this cannot be invoked as the Swedish Environmental Protection Agency's position.

The report was drawn up on behalf of the Swedish Environmental Protection Agency. The applicant at the Swedish Environmental Protection Agency was Jennifer Carlestam. Assistance has also been provided by Tea Alopaeus, Cecilia Anghus, Lisa Grabo and Stiva Liwiz. The working group was composed of Heads of Unit Sara Almqvist, Anna Bredberg and Carl Mikael Strauss. In particular, we would like to thank Ebba Willerström Ehrning in FossilFree Sweden for comments initially for the market analysis of measures in the industry.

Stockholm, 22 June 2023

Björn Risinger Director-General

Content

Summary

Climate Leap is an investment aid aimed at accelerating the transition to a fossil-free society. The support is given to physical investments that deliver high and sustainable climate benefits. The aim of Climate Leap is to reduce greenhouse gas emissions, contribute to the deployment and market introduction of technologies and impacts on other environmental quality objectives, health and employment.

The Environmental Protection Agency examines applications and decides on aid from Climate Leap in accordance with the Ordinance (2015: 517) on aid for local climate investments. The Ordinance requires the Swedish Environmental Protection Agency to monitor and evaluate the aid. The GBER Regulation (EU) No 651/2014 requires the evaluation of aid schemes with an annual budget of more than EUR 150 million. A final evaluation of the impact of Climate Leap will be submitted to the European Commission in 2023.
The evaluation shall be carried out in accordance with the evaluation plan adopted by the Commission (European Commission, 2020). The Swedish Environmental Protection Agency has instructed the WSP to carry out the evaluation, which will focus on decisions on aid in the period 2020-2022.

The aim of the mission is to carry out a final evaluation of the impact of Climate Leap which can be reported to the European Commission in 2023. The evaluation has three main focus areas and will respond to the evaluation questions in the evaluation plan.

The three main focus areas of the evaluation are:

- **Additionality**, i.e. how much of the investments;
  the emission reductions resulting from support from Climate Leap. If an investment or emission reduction had taken place even in the absence of the aid, it is not additional.
- **Indirect effects** on the market through distortions of competition, effects on employment, technology diffusion and positive or negative effects on other environmental objectives;
- **Proportionality and appropriateness** are about assessing whether aid has been granted to the projects with the highest reduction in greenhouse gas emissions, whether the aid intensity is at the required level and whether Climate Leap has been effective in achieving the environmental quality objective 'climate change mitigation'.

For each focus area there are evaluation questions:

Evaluation questions direct impact and additionality

i. *Has Climate Leap provided climate investments that can permanently reduce greenhouse gas emissions?*
ii. *Has the aid led to greenhouse gas emission reductions?*

Evaluation questions indirect effects

iii. Has the support provided market replication and diffusion of technology?

iv. Has the aid provided:impact on other environmental quality objectives and health?

v. Has the aid had been:impact on employment?

vi. Has the aid provided:effects on competition in the markets that: beneficiaries are active?

Evaluation questions proportionality and appropriateness

VII. Was the aid given to projects that deliver the biggest reduction in greenhouse gas emissions per krona invested?

VIII. Has Climate Leap provided the necessary support, at the level of aid required, for the implementation of the investment?

IX. Has Climate Leap been effective in speeding up the pace of achieving the environmental quality objective 'Limited climate impact'?

In order to answer the evaluation questions, previous evaluations have been summarised and a new survey study and market analysis carried out. The results of the survey relate to applications decided in the period 2020-2022. To assess whether Climate Leap has contributed to the implementation of the measures or whether they would have been carried out even without the aid, the survey study is used. Together with Klivit data, the survey results are then used to estimate additional emission reductions. Data from these sources also provide a basis for answering questions on indirect effects, proportionality and appropriateness. The market analysis carried out for industrial energy conversion complements the indirect impact assessments and has been based on public statistics, Klivit data and semi-structured interviews with market participants.

Answer to the evaluation question: *I Has Climate Leap provided climate investments that can permanently reduce greenhouse gas emissions?*

Yes, based on survey replies, Climate Leap has provided climate investments that can permanently reduce greenhouse gas emissions. The results show that 66 % of the measures granted were not implemented at all but Climate Leap. A further 25 % of the measures had been implemented according to the request, but to a lesser extent. The percentages relate to the number of actions.

In previous evaluations, a questionnaire has also been sent to contact persons applying for aid from Climate Leap (Riksrevisionen, 2019), (WSP, 2021), (Anthesis, 2022). The results of these indicate that between 50 % and 70 % of the measures supported by Climate Leap can be considered fully additional in the sense that the investment would otherwise not have taken place.

Answer to the evaluation question: *II Has the aid led to greenhouse gas emission reductions?*

The measures implemented in the period 2020-2022 are estimated to reduce

greenhouse gas emissions by a total of 33,6 million tonnes of CO 2-e cumulatively over the lifetime of the measures. Based on survey results and data on emission reductions from Klivit, we have estimated the additional impact of Climate Leap to be 26,9 million tonnes CO2-e (80 % of total emission reductions)1. Of these additional emission reductions, at least 19,9 million tonnes of CO 2-e are estimated to occur inside Sweden's territorial borders. One explanation why the share of additional emission reductions is higher than the share of additional investments is that additionality is higher in categories of measures with few measures, but where emission reductions are high.

The calculation of additional emission reductions is based on survey responses from successful respondents, which means that the counterfactual outcome is based on beneficiaries' assessments of what would have happened without Climate Leap. At the end of 2023, the question of additional emission reductions can be answered on the basis of econometrically estimated counterfactual relationships. The Swedish Environmental Protection Agency finances an ongoing research project at the Swedish University of Agricultural Sciences (SLU) "Evaluation of Climate Leap: Current scientific evidence and future design." The project runs until December 2023 and aims to improve understanding of the impact of Climate Leap on stakeholders' investment decisions, energy use, greenhouse gas emissions and economic performance using actual outcome data.

Answer to the evaluation question*: III Has the support provided market replication and diffusion of technology?*

Climate Leap has contributed to the market introduction and diffusion of technology. Analyses show that it concerns the effects of aid for the deployment of charging infrastructure and aid for liquefied biogas ((WSP, 2017) (WSP, 2021)). The survey shows that, for all types of measures, information was disseminated on the climate investments made, which is a prerequisite for technology diffusion. In the survey, around 15 % indicate that the measure is mentioned in the press and the media and almost 40 % have been contacted by other companies and organisations.

Answer to the evaluation question: *IV Has the aid had an impact on other environmental quality objectives and health?*

Overall, Climate Leap is considered to have a positive impact on other environmental quality objectives and health. Previous evaluations have assessed that the measures have overall positive effects, but that measures linked to energy conversion and district heating can have either positive or negative effects on the environmental objectives of 'Only natural acidification', 'No eutrophication' and 'Live forests'. While switching to geothermal heating reduces most air pollutants

Based1 on the survey responses, the additional emission reductions per measure are calculated by multiplying 1 minus percentage by the total emission reduction of the measure (annual emission reduction * lifetime). The proportion of additional emission reductions per category of measures is then used to calculate emission reductions per category of measures for the whole population.

regardless of the fossil fuel that is replaced, switching to biofuels can lead to increased levels of local air pollution and therefore negatively affect health and other environmental quality objectives. The possible increase in local air pollution is due not only to the type of fuel but also to abatement techniques.

Answer to the evaluation question: *v. Has the aid had an impact on employment?*

The replies to the survey suggest that around 20 % of the aid has resulted in new hiring, with a new permanent employee being the most common answer. New employment has taken place in all categories of measures, but mainly in the categories of waste, energy efficiency and biogas production.

Answer to the evaluation question: *have the aid had an impact on competition in the markets in which the beneficiaries operate?*

Market analyses have been carried out for measures in energy conversion industry, biogas production, plastic recycling and conversion to biogas for heavy-duty vehicles. There are indications that Climate Leap can provide significant competitive advantages for beneficiaries and that the application process is complicated for small operators, but neither previous market analyses nor those carried out under this mandate have been able to demonstrate distortions of competition. The extent of the competitive advantages for the beneficiaries and the risk of distortion are associated with the market in which the beneficiaries operate, making it difficult to generalise the results of the market analyses carried out to the whole Climate Leap.

The market analyses in previous evaluations can be summarised as showing no clear impact on competitiveness, barriers to entry or that less efficient firms may remain in the market due to the aid.
On the other hand, there may be obstacles for small operators to apply, as they require some knowledge and resources but also motivation to submit an application.

This evaluation presents a market analysis for energy conversion measures in industry. The market analysis focused on the markets within four SNI codes, which received a large proportion of aid.

In markets where beneficiaries operate in food production (SNI code 10), market concentration is generally high: mainly at product level, but in some cases also geographically. High market concentration increases the risk of negative effects on competition. However, the market analysis does not reveal any particular evidence that Climate Leap distorted competition. The market for sand, gravel and rock crushed (SNI code 0812) and other non-metallic mineral construction materials (SNI code 2399) are covered by small and large operators. The major players are often vertically integrated into the construction industry (construction), which is an industry with high market concentration. Procurement procedures maintain competition in construction. However, market concentration carries the risk of price cooperation and vertical integration implies low price transparency, but should not

be a reason why Climate Leap would distort competition. Support from Climate Leap has been given to both larger and smaller actors in different parts of Sweden.

The market for suppliers of energy conversion solutions is characterised by many large and smaller players. The aid was granted to four companies active in the energy conversion suppliers market. Among the applications accepted are three large and one smaller player in terms of turnover. The interviews highlight different perspectives on the competitive situation in the sector, but the combined interpretation is that Climate Leap does not distort competition. As a result, there are no indications that Climate Leap has caused significant distortions of competition in the market for suppliers of energy conversion solutions.

In addition, the interviews confirmed that larger actors tend to have more insight into whether energy conversion can save costs (regardless of the existence of Climate Leap). On the other hand, small operators can be incentivised through Climate Leap to carry out energy mapping and in many cases carry out energy conversion (with or without aid). Other factors that could favour smaller operators and possibly also competition are the fact that smaller companies are eligible under the EU Block Exemption Regulation for a larger proportion of aid, which should contribute to ensuring that the latter are not rewarded at the expense of small operators and, by preventing large players included in the EU ETS from receiving aid from Climate Leap2. Factors such as these are likely to favour smaller operators in particular, which could increase competition (all other things being equal).

Answer to the evaluation question: *VII Has aid been granted to those projects that deliver the highest reduction in greenhouse gas emissions per shadow invested?*

Based on approved applications, the preliminary reply is that the aid was to a large extent granted to projects with the highest reduction in emissions per krona invested. However, around 32 % of the payments have a climate benefit ratio lower than in 0,75. In general, these aids are relatively small and no link can be seen between large amounts of aid and low climate benefit ratios.

Answer to the evaluation question: *VIII Has Climate Leap provided the necessary support, at the level of aid required, for the implementation of the investment?*

Support has been at the level needed for the implementation of around 20 % of the measures. Around 45 % consider that a lower level of aid would have resulted in implementation to a lesser extent than in the application. The remaining 36 % indicate that they would have carried out the investment despite a lower share of aid.

Answer to the evaluation question: *IX Has Climate Leap been effective in speeding up the pace of achieving the environmental quality objective 'Mixed climate impact'?*

2Exceptions are made for the recovery of waste heat.

Yes, Climate Leap has been effective in accelerating the pace of reaching the environmental quality objective 'Limited climate impact'. On the one hand, a relatively large proportion (66 %) of the granted measures had not been implemented at all without Climate Leap and, on the other hand, Climate Leap has frontloaded climate investments that would have been carried out even without aid. The survey shows that 63 % of the measures implemented to some extent without support from Climate Leap had been postponed by 1-2 years.

Context

Sweden has a target to have no net greenhouse gas emissions by 2045. To achieve this goal, action is needed across all sectors of society, which requires a combination of different policies and measures. Economic instruments such as environmental taxes are important in the transition. These could be complemented by targeted actions to support technological development and market replication. Examples include demonstration projects, technology procurement and investment support, such as Climate Leap.

Climate Leap is an investment aid aimed at accelerating the transition to a fossil-free society. The support is given to physical investments that deliver high and sustainable climate benefits. The aim of Climate Leap is to reduce greenhouse gas emissions, contribute to the deployment and market introduction of technologies and impacts on other environmental quality objectives, health and employment. Applications for support may be made by enterprises, municipalities, regions and organisations. The aid was introduced in 2015 and so far more than SEK 13 billion has been granted to more than 5 000 projects (Swedish Environmental Protection Agency, 2023).

Investment aid affects the markets in which the beneficiaries operate. A potential negative effect of could be general market effects in new or growing markets with a few players, where some players are market leaders or could benefit more from the aid than other players in the same market. In addition, there is a risk that some operators may withdraw their applications after aid has been granted or that the action will not be completed. In addition, the aid may lead to a certain regional and sectoral distortion or crowd out private investment.

The Environmental Protection Agency examines applications and decides on aid from Climate Leap in accordance with the Ordinance (2015: 517) on aid for local climate investments. The Ordinance requires the Swedish Environmental Protection Agency to also monitor and evaluate the aid. The GBER Regulation (EU) No 651/2014 requires the evaluation of aid schemes with an annual budget of more than EUR 150 million. The Environmental Protection Agency needs evidence and analysis of the effects of Climate Leap in order to be able to deliver a final evaluation of Climate Leap's effects to the European Commission in 2023. The evaluation shall be carried out in accordance with the evaluation plan adopted by the Commission (European Commission, 2020). The Swedish Environmental Protection Agency has instructed the WSP to carry out the evaluation, which will focus on decisions on aid in the period 2020-2022.

Evaluations of Climate Leap have been carried out in the past. Between 2017 (WSP 2017: Climate Leap – an evaluation of the impact of the policy), 2019 (National Audit Office 2019: The National Audit Office's audit of Climate Leap (RiR 2019: 1), 2021 (WSP 2021: Impact of Climate Leap) and 2022 (Anthesis, 2022: Evaluation Climate Leap 2019-2020). Previous evaluations and collected evidence are included in the basis for analysis in this final evaluation. As the last evaluation

(Anthesis, 2022) studied applications decided in 2019-2020, further evidence has been provided to allow the final evaluation to include effects for the years up to 2023.

Objectives and purpose

The aim of the mission is to carry out a final evaluation of the impact of Climate Leap which can be reported to the European Commission in 2023. The evaluation has three main focus areas:

- **Additionality**, i.e. the proportion of investments and emission reductions resulting from Climate Leap support. If an investment or emission reduction had taken place even in the absence of the aid, it is not additional.
- **Indirect effects** on the market through distortions of competition, effects on employment, technology diffusion and positive or negative effects on other environmental objectives;
- **Proportionality and appropriateness** are about assessing whether aid has been granted to the projects with the highest reduction in greenhouse gas emissions, whether the aid intensity is at the required level and whether Climate Leap has been effective in achieving the environmental quality objective 'climate change mitigation'.

Evaluation questions have been formulated for each focus area, see below:

Evaluation questions direct impact and additionality

i. Has Climate Leap provided climate investments that can permanently reduce greenhouse gas emissions?

ii. Has the aid led to greenhouse gas emission reductions?

Evaluation questions indirect effects

iii. Has the support provided market replication and diffusion of technology?

iv. Has impact of the aid on other environmental quality objectives and health?

v. Has the aid had an impact on employment?

vi. Has the aid has had effects on competition in the markets that: beneficiaries are active?

Evaluation questions proportionality and appropriateness

vii. Was the aid given to projects that deliver the biggest reduction in greenhouse gas emissions per krona invested?

VIII. Has Climate Leap provided the necessary support, at the level of aid required, for the implementation of the investment?

IX. Has Climate Leap been effective in speeding up the pace of achieving the environmental quality objective 'Limited climate impact'?

Method

The methods covered by the assignment are compilation and analysis based on previous evaluations and future regression analyses from SLU, carrying out surveys, market analysis and interviews with market participants, and an overall analysis of all the evidence. In addition to previous evaluations and survey results, the evaluation is based on Klivit data for applications decided in 2020-2022. The Swedish Environmental Protection Agency has made extracts from the Klivit database accessible, which includes information collected in connection with the application, decision and updated when the measures are finally reported. The variables available include emission reduction, aid amount, annual turnover, organisation type, category of action and type of measure, and lifetime of the measure. A more detailed description of the methodology can be found in the respective chapters.

Processing and decision on aid

This section describes the way in which aid is decided under Climate Leap. This is to provide a background to the design of the policy.

APPLICATION PROCESS

The Swedish Environmental Protection Agency decides on the number of calls for proposals per year and publishes information on assessment sessions on its website, in accordance with Section 16 of the Climate Leap Ordinance (2015: 517) on support for local climate investments.

Aid applications are sent to the County Administrative Board of the county in which the investment is to be implemented (see Section 11 of the Climate Leap Ordinance). At the end of the call for proposals the County Administrative Board hands over the application documents to the EPA, with its own opinion (see Section 15 of the Climate Leap Ordinance). The opinion will contain the Board's assessment of whether the investment will help to realise municipal or county climate and energy plans and whether it contributes to achieving national climate objectives. The EPA then examines all the applications received.

SELECTION CRITERIA AND METHODS FOR SELECTING BENEFICIARIES

The Regulation states that aid shall be granted in the first place to the investment (s) which, at each examination stage, is deemed to deliver the largest sustainable reduction in greenhouse gas emissions per chrona invested. It looks first at whether the application is eligible for aid. The main selection criterion for granting funding is the climate benefit of the investment, calculated as the emissions reduction per krona invested. Applications deemed to result in too low emission reductions per krona invested are rejected. Those applications that meet the basic criteria are then assessed to determine whether the information provided about, for example, emissions reductions seems to be plausible.

The Climate Leap Ordinance also imposes a number of restrictions. Aid may not be

granted to activities which are subject to a permit requirement in accordance with Chapter 3, Section 1 of the Emissions Trading Ordinance (2020: 1180), with the exception of investments involving increased use of waste heat, see Section 6 of the Climate Leap Ordinance. Aid may also not be granted to measures involving electricity production, with the exception of electricity production based on biogas, see Section 6a of the Climate Leap Ordinance. In order to have an incentive effect in the aid scheme, there are also restrictions that aid may not be granted to investments already undertaken, to investments required by law or regulation and not to investments that are repaying in a short period of time.

After an initial screening of applications received, a limit is set for the emission reduction per krona invested that each application needs to meet in order to qualify for support. The threshold may vary between calls for proposals. In the case of investments where the reduction in emissions can be regarded as equivalent to other investments receiving aid, the EPA assesses the impact on the diffusion of technology and other environmental objectives, etc. and may award aid to investments on those grounds.

Structure of the report

The report begins with a review of how previous evaluations answer the evaluation questions contained in the approved evaluation plan. The chapter then presents survey responses based on additionality and indirect effects on competition and employment. The following chapter presents the market analysis for the energy conversion type measure industry. The final chapter provides answers to the evaluation questions. Replies to all survey questions are set out in Annex.

Past evaluations

One of the supporting documents for the current evaluation is previous audits of Climate Leap. This chapter summarises the results of previous evaluations ((WSP, 2017), (National Audit Office, 2019), (WSP, 2021) and (Anthesis, 2022)). The structure of the chapter follows the evaluation questions of the evaluation plan approved by the EU (European Commission, 2020).

Direct impacts and greenhouse gas emissions

Impacts on greenhouse gas emission reductions in previous evaluations were mainly based on data in the applications, as data on realised emission reductions were not available. Where additional emission effects have been assessed, they are based on survey studies.

The WSP (2017) included applications received and decided between 2015 and 20163. According to the approved applications, greenhouse gas emissions are estimated to decrease by a total of 6,3 million tonnes CO_2-e cumulatively aggregated over the lifetime of the measures. The data are reported over the lifetime of the measures, which is different from subsequent summaries, which report emissions per year. However, according to the evaluation in the WSP (2017), it is problematic to add up the emission reductions of all applications as several links in the production and distribution chain have been granted aid and therefore the emission reductions are at risk of double counting. The National Audit Office (2019) evaluated applications from the period 2015-2017. The report mentions that the audit includes analysis of applications received (Riksrevisionen, 2019, p. 17). However, it is not clear whether the evaluation was limited to the measures adopted. Emissions reductions are not accounted for in the report. Instead, there is a discussion on the interpretation of the emission reductions in the applications. The review, like the WSP (2017), draws attention to certain shortcomings in the estimates of emission reductions.

WSP (2021) evaluated the impact of Climate Leap on the basis of the applications received and decided in the period 2016-2018. The emission reductions estimated by the Swedish Environmental Protection Agency based on the applications were 1,1 million tonnes of greenhouse gases (CO 2-e)per year for measures granted between 2016 and 2018. In the available information on emission reductions, the Swedish Environmental Protection Agency had adjusted the emission figures in light of the fact that previous evaluations highlighted the risk of double counting of emission reductions when a measure is a link in a chain (for example, aid granted at different stages for biogas: biogas production, upgrading and refuelling points).

Anthesis (2022) evaluated the impact of Climate Leap in a similar way to the evaluation in WSP (2021), but for applications decided in the period 2019-2020. However, no aggregation was made of the emission reductions.

3Until 2016-10-20. Only applications decided upon were included in the evaluation.

Annual emission reductions were accounted for for 17 out of 22 type measures. The report mentions that aggregation could not be made due to non-compliances of approximately 33 % for the variable annual emission reduction (kg/CO2-e). (Anthesis, 2022, p. 19).

Has Climate Leap provided climate investments that can permanently reduce greenhouse gas emissions?

The evaluation question of whether Climate Leap has provided climate investments that can sustainably reduce greenhouse gas emissions has been addressed differently in previous evaluations.

The WSP (2017) methodology used to assess the durability of emission reductions is to link the lifetime of the completed investment to its duration and to examine whether the policy is cost-effective. The assessment of cost-effectiveness compares the investment cost per kilogram of reduced greenhouse gas with the general instruments operating in the same market. The conclusions drawn from the analysis relate to cost-effectiveness. One conclusion is that relatively many measures are those where emissions are already regulated with a full carbon tax, which should make relatively cheap measures to reduce emissions profitable even without support from Climate Leap. The fact that the measures are implemented with support from Climate Leap is considered to indicate that the price signal from the general instruments is low in relation to the cost of the measure. The conclusion is also based on the following reasoning concerning the criterion of profitability:

‘There are advantages in having a simple rule in the assessment of profitability as it makes it easier to administer. One example is the criterion that the non-assisted pay-out period should not be less than 5 years. However, one disadvantage is that this rule does not work for all applications. Climate Leap covers both applications that do not have alternatives and those relating to technology replacement. For example, the expansion of biogas production and the recovery or destruction of gases are those that are generally genuinely new investments and lack alternatives. In other contexts, the application relates to the exchange of technology: from current fossil technologies to climate-friendly technologies. In the former case, the pay-off criterion provides guidance on profitability, but in the latter case its application becomes difficult. A new boiler, replacing an end-of-life boiler that needs to be replaced, usually has a life span longer than 5 years and therefore a pay-off period longer than 5 years. If the choice is between investing in a new fossil fuel boiler and a new biofuel boiler, and these also have similar costs, the 5-year rule will allow investments that are profitable even without aid. Instead, if the additional cost of the climate-friendly option is indicative, the conditions will be better to meet.” (WSP, 2017, p. 68).

The Swedish National Audit Office (2019) considers it problematic to assess durability and cost-effectiveness as it is difficult to make accurate emission calculations. If, instead, durability is linked to the realisation of the investment, data can be obtained from surveys carried out. Based on survey replies, granted measures

are almost always implemented. In the National Audit Office's (2019) survey, 50 respondents out of a total of 758 replies from respondents to granted measures indicated that they chose not to implement the granted measure, see Annex 2 to the National Audit Office (2019). This means that around 7 % of the measures granted had not been implemented. According to the WSP (2021), approximately 3 % of respondents to granted measures accounted for failure to implement the measure, and of the 80 % that reported the final measure, 7 % indicated that the measure had been implemented to a lesser extent than in the application. The corresponding share in Anthesis (2022) was that 1.4 % of the approved actions were not implemented and of the 75 % reported as final %, 7 % replied that the measure had been implemented to a lesser extent than in the application.

Based on rejected applications, it appears that between 34 % and 53 % of the measures have not been implemented. In the National Audit Office's survey (2019), 34 % of respondents for rejected measures stated that they will not implement the measure for which they applied for a grant. The corresponding shares were 46 % and 53 % respectively of the rejected applications in WSP (2021) and Anthesis (2022).

Has the aid reduced greenhouse gas emissions?

No assessment was made of the additionality of the aid in the WSP (2017), i.e. to what extent the emission reductions depend on the aid or whether they had been implemented anyway. One problem in evaluating Climate Leap's additional emission reductions is the lack of necessary information on realised emission reductions. However, suggestions were made on how to analyse additionality in future evaluations. Among other things, WSP (2017) proposed that the Swedish Environmental Protection Agency request information in a follow-up report when the measures have been in operation for a couple of years.

In the absence of data on realised emission reductions and the emission reductions that would have occurred without Climate Leap, the National Audit Office (2019) carried out a survey of the applications decided in the period 2016-2017. The questionnaire was sent to contact persons for both approved and rejected applications. According to the survey, 52 % of the supported measures are fully additional because they would not have been implemented without the aid. A further 30 % of the measures are partially additional as they would have been implemented on a smaller scale without the support. When asked about the implementation of the rejected applicants, 34 % replied that the action had not been and will not be implemented. Furthermore, 21 % indicated that the action was carried out or would be carried out on a smaller scale than in the application. The Swedish National Audit Office interprets the low proportion as meaning that the Swedish Environmental Protection Agency has made a good assessment of which projects need support and not.

In order to estimate whether the realised emission reductions were of the same scope as in the application, the WSP (2021) reviewed a sample of final reports. The final reports are submitted by the beneficiary no later than three months after the

end of the action. 94 % of final reports made the same assessment of emission reduction as in the application. The additional survey responses showed that 84 % of respondents made the same assessment as in the application. One possible reason why the results of the survey differ from the final reports is that more time had elapsed between the completion of the action and the questionnaire than between the completion and the final report.

Additionality of the investment can be assessed based on survey responses, but there are difficulties in estimating realised emission reductions. One problem when assessing additionality for direct emission reductions is that emission reduction data is based on projections. Actual emission reductions can only be collected retrospectively, which was not noted by the WSP (2021). Only 7 % of final reports based estimates on real measured values.

In order to estimate additionality, the WSP (2021), like the National Audit Office, carried out a survey of beneficiaries. The result showed that around 52 % of the granted measures can be qualified as fully additional. Converted into emission reductions, it emerged that around 72 % of the emission reductions in supported measures can be described as fully additional, that is to say, they would not have taken place without Climate Leap. A further 10 % is partly additional due to the smaller implementation of the measures. As regards rejected measures, the survey showed an additionality of 65 % of the estimated emission reductions. It was assessed that the additional impact should be based on granted measures as the response rate for granted measures is higher. In addition, it was noted that there may be differences between granted and rejected measures, so that the results of rejected measures cannot be directly passed on to granted measures.

Anthesis (2022) has evaluated the impact of Climate Leap in a similar way to previous evaluations but for actions decided in 2019-2020. A survey was carried out using the same wording as the one carried out by the WSP (2021). No aggregation of emission reductions was made. Based on the survey, 72 % of the measures granted are considered to be fully additional and a further 22 % are partially additional. In the case of rejected applications, it is estimated that 53 % have full additionality as these measures did not take place without support. In addition, 12 % of those refused indicated that the measure had been implemented, but to a lesser extent. The estimated additionality of the rejected measures is therefore lower than that of the measures granted. However, according to Anthesis (2022), it is difficult to compare these groups as they differ. Generally speaking, support has been given to measures with a high climate benefit and a lower degree of profitability, which may mean that profitable measures have been implemented despite the fact that they have not received aid. If this is the case, it is also reasonable that additionality is lower for rejected applications. Comparing the outcome of estimated additionality between granted and rejected applications is therefore problematic (Anthesis, 2022).

The Swedish National Audit Office (2019) states in Annex 2 that the categories of measures Transport and energy conversion have a high degree of additionality: 77 % and 59 % of respondents respectively stated that the measure had not been implemented without support from Climate Leap. Similar results can be found in both WSP (2021) and Anthesis (2022) where Transport and Energy Conversion are

categories of measures that respondents more than other categories would not deliver at all without Climate Leap funding. This suggests that additionality is higher for these categories of measures.

The table below summarises the survey results of previous evaluations. It can be noted that the fully-fledged additional investments for approved applications are in a range of 52 % to 72 %, the partially additional in the range of 10-30 % of the measures.

Table 1. Summary of results for direct impacts in previous evaluations.

	WSP (2017) 1	RiR (2019)	WSP (2021)	Anthesis (2022)	Comment
Time period	2015 – 2016	2015 – 2017	2016 – 2018	2019 – 2020	No survey of measures decided in 2015
Additional investment rejected	—	34 %	46 %	55 %	Percentage of rejected applications that reply that the measure has not been implemented
Additional investments granted	—	52 %	52 %	72 %	Full additionality based on survey replies for granted measures
Partly additional investments	—	30 %	10 %	22 %	Partial additionality based on survey replies for granted measures
Additionality emissions reductions	—	—	72 %	—	Calculation of full additionality for projected and audited emission reductions in applications

Notation: 1. The WSP (2017) did not carry out a survey study, but rather a qualitative discussion on the preconditions for estimating additionality. The marking "-" means that the data is not reported.

Indirect effects

Four of the evaluation questions concern indirect effects of Climate Leap. That is:

iii. Has the support provided market replication and diffusion of technology?
iv. Has the aid had an impact on:other environmental quality objectives and health?
v. Has the aid had an impact on: employment?
vi. Has the aid had an impact on:competition in the markets that: beneficiaries are active?

Effects on market replication and technology diffusion

Effects on market replication and deployment of technologies have been assessed in two of the previous evaluations.

WSP (2017) assessed the impact on technology diffusion by qualitatively analysing grant applications. According to the evaluation, most of the measures supported by

Climate Leap are those based on existing technologies. This is because Climate Leap primarily supports actions with a high climate impact per krona invested and not, for example, investments in innovative prototypes or preparatory studies. Nevertheless, the Climate Leap is considered to have an impact on technology diffusion for certain measures such as the deployment of charging infrastructure and the destruction and recovery of gas. The analysis of market replication and technology diffusion was based on reasoning on the frontloading of investments and the extent to which the type measure can be assumed to concern new technologies. For example, walking and cycling infrastructure and measures in real estate were assessed as relating to existing technologies, while rechargeable vehicles were assessed as a new technology that had passed the prototype stage. Technology deployment of rechargeable vehicles could thus be expected as an effect of the deployment of charging infrastructure (WSP, 2017, p. 52).

The National Audit Office (2019) has not assessed the impact of Climate Leap on technology diffusion. On the other hand, they note that the Swedish Environmental Protection Agency has granted aid to charging stations and transport measures at a lower cut-off point for emission reduction per shaft than other types of measures because, in addition to the emission reduction, these are also considered to contribute to the dissemination of technology.

WSP (2021) has examined whether there have been dynamic effects, i.e. effects that generate higher cost-effectiveness over time on the market for liquid biogas. Reading, network and exposure effects have been studied through interviews with market participants. For exposure effects, replies to the survey question were also used if the measure was brought to the attention of others. This is to obtain an indication of the level of exposure and information on the technology spread between market participants. The reason given is that research has shown that communication on new technologies is a necessary aspect to achieve technology diffusion.[4] The evaluation concludes that Climate Leap is likely to have contributed to some dynamic effects for liquid biogas and the analysis indicates that there are effects on technology diffusion and exposure of implemented measures.

Impact on other environmental quality objectives and health

Impacts on environmental quality objectives other than limited climate impacts have been assessed in two of the previous evaluations.

The WSP (2017) assessed impacts on other environmental quality objectives and health qualitatively for granted type measures. The assessments were based on literature reviews and the results were presented on a 3° scale (improvement, no change, deterioration). The assessment revealed that changes in emissions of other air pollutants are mainly affected. Positive effects were assessed on the environmental quality objectives ‘Risk air’, ‘Only natural acidification’, ‘Protecting ozone layer’, ‘No eutrophication’, ‘Live forests’ and ‘Good built environment’. A potential negative impact on other environmental quality objectives was noted for measures involving fuel switching from fossil fuels to combustion of biofuels. This

4 (Rogers, 2003) and (Struben med Sterman, 2008).

is due both to the fact that combustion emissions can be higher and because more transport is needed when biofuels replace fossil fuels. Furthermore, it was noted that since biofuels such as biogas reduce air pollution to a lesser extent than electrification, measures involving switchover to electricity have an advantage in terms of lower emissions and often also reduced noise. Reducing air pollutant emissions and noise was assessed as having a positive impact on health.

WSP (2021) selected type measures with a relatively high grant amount for analysis and possible quantification of impacts on other environmental objectives. In a first step, the impact on the other environmental quality objectives was described. Where possible, the environmental impact was quantified in relation to the reduction of greenhouse gases by the measures, such as the change in kilograms of nitrogen oxides (NOx) emissions per kg CO 2-e.Quantifications were possible for the type measures biogas production plant, biogas refuelling station, purchase of heavy-duty vehicles and charging infrastructure. The calculations showed the greatest impact on emission reductions of nitrogen oxides, volatile organic compounds and hydrocarbons. Based on the descriptions, it was found that measures related to energy conversion and district heating can have either positive or negative impacts on environmental objectives, depending on the type of energy conversion carried out and on how electricity and fuels are produced and how energy is supplied. While switching to geothermal heating reduces most air pollutants regardless of the fossil fuel that is replaced, switching to biofuels can lead to increased levels of local air pollution and therefore negatively affect other environmental quality objectives. The possible increase in local air pollution depends not only on the type of fuel but also on the abatement technology used. Overall, Climate Leap was deemed to have had a positive impact on the environmental quality objectives.

Impact on employment

Of the previous evaluations, only the WSP (2017) has examined the impact of Climate Leap on jobs and employment.

For direct employment effects, WSP (2017) distinguishes between the investment phase and the operational phase as employment affects different sectors. In the investment phase, jobs are usually created in the construction sector, while during the operational phase jobs are added to the aided activity. However, the WSP (2017) notes that caution needs to be taken when estimating employment. If previous workplaces disappear when the measure becomes operational, the net effect on employment may even be negative.

Employment in the investment phase was assessed as possible on the basis of the investment cost using statistical relationships on the number of full-time workers employed per krona invested. This key figure was used to estimate the short-term impact on employment based on the investment amount of the measures. For 2016, employment is estimated at around 550 full-time equivalents for approved applications, with approximately 240 full-time full-time workers financed by Climate Leap support. However, it does not provide information on whether these

full-time workers would have been employed even without the projects funded by Climate Leap. The method of calculating employment effects was based on key figures between the total investment in SEK million and the number of persons employed in the construction sector taken from the input-output tables of the national accounts. By contrast, the extent to which employment changes in the rest of the economy is not estimated in input-output analysis. The report (WSP, 2017) mentions that, since it is in the construction industry that employment is created, it is likely that these persons would have been employed even without Climate Leap. The long-term employment impact of Climate Leap arises during the operational phase of funded actions, but operational cost data are missing. For the employment effects of the operational phase, the descriptions in the applications were studied. Based on a review of the descriptions, it emerged that the vast majority of applications state that there is no direct impact on employment but that the new investments can be managed and maintained by existing staff.

Effects on competition

There is always a risk that State aid may affect competition by, for example, giving significant competitive advantages to beneficiaries, making it more difficult for smaller firms to apply for aid, or excluding certain categories of operators from applying for aid. Previous evaluations have partly discussed this risk and partly examined the effects on competition through interviews with stakeholders.

According to WSP (2017), there is a risk that Climate Leap adversely affects competitive conditions in the market. For example, if the beneficiaries offer cheaper charging of electric cars compared to market prices, this may prevent market entry for operators who have not applied for aid. However, no in-depth analysis was carried out on the impact of Climate Leap on the market and on competition.

The National Audit Office (2019) also did not evaluate the impact of Climate Leap on the market and competition, but focused on assessing whether the implementation of Climate Leap was effective and whether the aid contributed to achieving the climate objective in a cost-effective way. According to the National Audit Office (2019), the administrative costs for grant applicants are low and there are economies of scale for multiple applicants. For grant applicants, it was estimated that the administrative cost was 1 % per grant krona, which is significantly lower than the 8 % grant cost calculated for Klimp investment aid (Riksrevisionen, 2019, p. 34). Low administrative costs mean that the threshold for applying for aid is low and can therefore be expected to result in a low level of exclusion of companies. At the same time, economies of scale suggest that companies intending to apply several times are better placed than companies that have not applied for aid in the past. The latter may be a disadvantage for small businesses.

Both WSP (2021) and Anthesis (2022) have analysed market and competition effects for selected types of measures. The analyses are mainly based on interviews with a sample of market participants and are complemented by statistics to describe market developments. Both evaluations use a methodology to assess competitive effects based on the UK Treasury's manual for assessing the competitive effects of subsidies (HM Treasury, 2007). It involves first identifying and describing the

market and then assessing the effects on competition on a number of issues.

WSP (2021) examined the impact of Climate Leap on the biogas market. The focus was on examining whether Climate Leap has affected the number of undertakings on the market, whether it has led to barriers to entry, whether the companies' competitiveness has been affected, whether the aid has led to public operators competing with private operators and whether it is profitable to seek support from Climate Leap. The evaluation shows that Climate Leap has had little or no impact on the number of companies in the market. However, there are uncertainties as some companies that received aid were waiting for environmental permits before they could implement the measure. Effects can only be visible once beneficiaries have obtained an environmental permit and started production. However, as the applications mainly concern additional investments, such as capacity expansion and upgrading, the aid is likely to be awarded to existing operators.

According to WSP (2021), the aid did not lead to increased barriers to entry for new firms. At the same time, the aid may have lowered certain barriers for the production of liquid biogas, for example. However, the authors note that it is difficult to assess whether Climate Leap affected competition in south-west Sweden due to the strong link with the Danish market. The evaluation also shows that few, if any, operators invest in biogas production and distribution without Climate Leap, indicating profitability in applying for support under the WSP (2021). On the other hand, the cost of applying for aid is likely to be the same regardless of turnover, which means that it is relatively more expensive for small operators. The fact that municipalities received one fifth of the grants indicates competition with private companies, but since the biogas market is local, it cannot be excluded that the impact may have occurred on markets where there is no other operator.

Anthesis (2022) carried out a market analysis in three areas: conversion to biogas for heavy-duty vehicles, plastic recycling and energy conversion in industry. According to the evaluation, there is no clear impact on competitiveness, barriers to entry or that less efficient firms may remain in the market due to the aid. On the other hand, according to the interviews, there may be financial obstacles for small operators to apply, as it requires some knowledge and resources to submit an application. In relation to the aid applied for, the application costs are relatively higher for small projects. The analysis is mainly based on interviews with a small sample of market participants and therefore, according to Anthesis (2022), the conclusions should be interpreted with caution.

Proportionality and appropriateness

Previous evaluations have addressed to some extent one of the three evaluation questions linked to the proportionality and appropriateness of Climate Leap.

VII. Was the aid given to projects that deliver the biggest reduction in greenhouse gas emissions per krona invested?

VIII. Has Climate Leap provided the aid needed, with the aid intensity required, for the investment to be carried out?

IX. Has Climate Leap been effective in speeding up the pace of achieving the environmental quality objective 'Limited climate impact'?

Reduction of emissions per krona invested

The evaluation question of whether support was given to the projects with the highest reduction in greenhouse gas emissions per krona invested was examined in the WSP (2017) and the National Audit Office (2019), but not in the subsequent evaluations WSP (2021) and Anthesis (2022). In conclusion, WSP (2017) and the Swedish National Audit Office (2019) consider that the cut-off point for emission reduction per investment krona defined by the Swedish Environmental Protection Agency has been complied with when deciding on aid, but that there are circumstances in which aid has not necessarily been granted to projects that deliver the greatest reduction in emissions per shone invested.

WSP (2017) noted a wide variety of typical measures when comparing the investment cost per kilo of reduced CO2 equivalent. Charging stations for electric cars had the most expensive emission reductions. One of the circumstances referred to by WSP (2017) makes it difficult to assess whether projects with the highest reduction in emissions per shaft of investment received aid is that the same CO2 equivalent emissions are at risk of double counting as the aid goes to measures at different stages of the same emission reduction.

The Swedish National Audit Office (2019) states that a lower requirement for a climate-benefit ratio (emission reduction per krona invested) applies to aid for charging stations for electric cars and transport measures. As regards the estimation of the climate benefit ratio, the National Audit Office (2019) notes that the investment cost needs to reflect the socio-economic cost of reducing emissions. However, the National Audit Office (2019) finds shortcomings in this respect, which concern both the cost and the emission calculations. Because of the shortcomings, the National Audit Office considers that the aid may have been given to measures other than the most cost-effective.

Has the aid been at the necessary level?

The question of whether the support from Climate Leap was at the level needed for the implementation of the investment has been partly addressed in previous evaluations.

WSP (2017) draws attention to the complexity of the issue of Climate Leap providing the necessary support. The authors note that it is difficult to assess the level of support required for a measure to be put in place. Furthermore, the cost-benefit assessments are difficult to check at the stage of processing, as applicants have a large amount of information. WSP (2017) notes that there are advantages in having a simple rule in assessing profitability as it facilitates processing. However, one disadvantage is that such rules rarely work for all applications. For example, Climate Leap covers both applications that do not have alternatives and those relating to technology switching, which means that profitability cannot be assessed

on the basis of the same criterion.

The National Audit Office (2019) does not address the issue of whether Climate Leap has provided the necessary support for the implementation of the investment.

WSP (2021) and Anthesis (2022) do not explicitly address the question of evaluation, but survey answers if the measure had been implemented with 10 percentage points lower aid rate can provide an indication of whether the aid was at a level necessary for the realisation of the investment.

The answer option 'the measure had not been implemented at all' indicates that for between 15 % and 33 % of the measures, the aid intensity has been at the required level, whereas the aid could have been 10 percentage points lower for 23-38 % of the measures. The latter because the measures were assessed by respondents to the same extent as in the application with 10 percentage points lower support, see Figure 1.

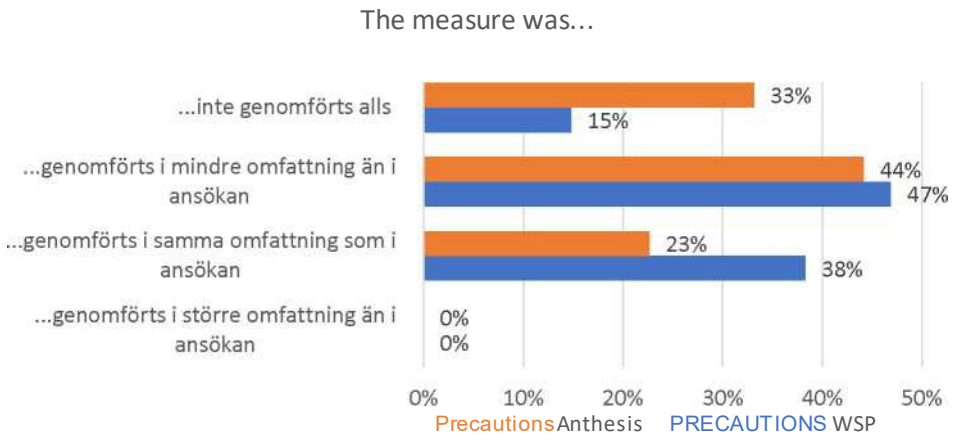


Figure 1. Answer to question: What would it have been if your organisation received only X% of the total cost of the action?
Notation: In the WSP (2021), each respondent was allowed to take a position on 10 percentage points lower than the aid awarded, while the wording of Anthesis (2022) replaced X% by '-10 % grant rate'.

Environmental objective limited climate impact

Previous evaluations address certain aspects of the effectiveness of Climate Leap to speed up the achievement of the environmental quality objective 'climate change mitigation'. From the evaluations, the Swedish National Audit Office (2019) raises concerns as to whether the emission reductions can be linked to the environmental quality objective 'Limited climate impact'.

The National Audit Office notes that the emission factors in the guidance for emission calculations are based on life cycle emissions and thus include emission reductions both in Sweden and in other countries. The emission factors used in other contexts, for example in Sweden's reporting to the UN and the EU, as well as in the follow-up of the interim targets for the environmental objective 'Limited climate impact' are based on the carbon content of fuels and are therefore slightly lower for

fossil fuels and higher for biofuels compared to the life cycle emissions used in

Climate Leap. The different approaches make it difficult to assess which of the emission reductions to which Climate Leap measures contribute can also be linked to the achievement of the objectives. The National Audit Office (2019) considers that the guidelines for emission calculations should follow the same principles as for other climate reporting. The Swedish National Audit Office also notes that the impact of technological developments or other instruments on emissions in the future is not taken into account when deciding on measures. If only the current situation and not expected future changes are taken into account, the emission reduction over the lifetime of the measures is overestimated. 5

While there is no discussion on the achievement of objectives in subsequent evaluations, the results of the surveys presented in the WSP (2021) and Anthesis (2022) can provide evidence to answer the question whether Climate Leap increases the pace of reducing greenhouse gas emissions. Respondents who gave a different answer than 'the measure would not be implemented at all' had a follow-up question on how the timetable for the measure would have been affected if they had not received support from Climate Leap. In the WSP survey, 54 % indicated that the timetable should have been postponed and in the Anthesis survey the corresponding figure was 60 %. These respondents had to estimate the delay in the timetable, see table below.

Table 2. How much do you estimate that the action had been delayed?

Response options	Share (WSP, 2021)	Share (Anthesis, 2022)
Approx. 6 months	7 %	3 %
About 1 years	30 %	46 %
About 2 years	38 %	27 %
About 3 years	17 %	15 %
About 4 years	3 %	2 %
About 5 years	2 %	2 %
More than 5 years	2 %	5 %
Number of respondents	326	59

Notation: WSP (2021) presents survey replies for the period 2016-2018 and Anthesis (2022) presents survey replies for the period 2019-2020.

The replies suggest that in most cases the timetable would be delayed by around 1-2 years for the 54 % to 60 % of the measures that are not fully additional.

5 During processing, the Environmental Protection Agency assesses developments. If the technical lifespan extends to periods of application of new technologies, the lifetime is adjusted downwards. The procedure has not changed since the National Audit Office's audit, but it has been clarified by indicating on the web: "Lifespan means the number of years the investment is expected to be in use and deliver the expected greenhouse gas emission savings indicated in the application".

Survey analysis

A questionnaire has been sent to contact persons for measures which have received a decision on aid from Climate Leap in the period 2022-2021. The survey was sent to contact persons for over 2 300 applications and answered by 54 %, which can be considered as a normal response rate. Both rejected and accepted applications are included in the survey, but the response rate is lower for rejected applications. The results of the survey are presented in their entirety together with a non-response analysis in Annex 1.

In this chapter, the replies to the questionnaire were supplemented by data from Anthesis (2022) for measures adopted in 2020. The results in this section are therefore presented for the period 2020-2022 where possible. 6The main objective of the analysis is to assess the additionality of the aid both for the implementation of granted measures and for greenhouse gas emissions. The results of the survey are supplemented by extraction from the Klivit database to calculate additional climate effects. Further effects on competition and employment are also analysed on the basis of the survey responses.

When quantifying additional effects, it is assumed that the responses to the survey can be passed on to the whole population and that the implementation of the measure provides a basis for drawing conclusions on emission reductions. However, the result should be interpreted in the light of the fact that there may be some overestimation of additional effects as respondents to granted measures may have an incentive to indicate that the measure would not have been implemented without Climate Leap in order to maintain the aid. It is worth noting that the questionnaire is anonymous and responses cannot constitute a review of decisions.

Additionality

In order to assess additionality, i.e. whether Climate Leap has contributed to the implementation of the measures or whether they would have been carried out even without the aid, questions were asked to the respondents about the importance of the aid.

Full additionality

Applications approved

In the survey, the successful applicants have been given an opinion on the impact of the measure if the project had not received funding from Climate Leap. Table 3 shows that, according to respondents, 66 % of the measures had not been implemented without funding from Climate Leap.

6According to the evaluation plan, the evaluation will cover measures decided in 2020-2023. Questionnaires to beneficiaries decided in 2023 were not included as a very small part of the actions were assessed as completed by the end of the month of April/May 2023 when the questionnaire was sent out.

Table 3. Answer to question: What would you think it would have been if the measure did NOT receive funding from Climate Leap? The measure had... (measures granted in 2020-2022).

Response options	By number	Share
... not implemented at all	598	66 %
... carried out according to the application but to a lesser extent	224	25 %
... carried out in accordance with the application and to the same extent	67	7 %
... carried out according to the application but to a greater extent	1	0 %
... instead, it has been replaced by another technical solution, namely...	18	2 %
Total	908	100 %

Notation: 'Scale' refers to the climate impact compared to what was described in the application.

If Climate Leap had meant 100 % full additionality, all respondents would have assessed that the measure would not have been implemented at all without aid. Based on the survey responses for the granted measures, the implementation of the measure is fully additional according to 66 % of respondents.

In Figure 2, the answers to the same question are broken down by category of measure. The figure indicates that full additionality is more common in biogas production, transport and energy conversion than for the other categories of measures.

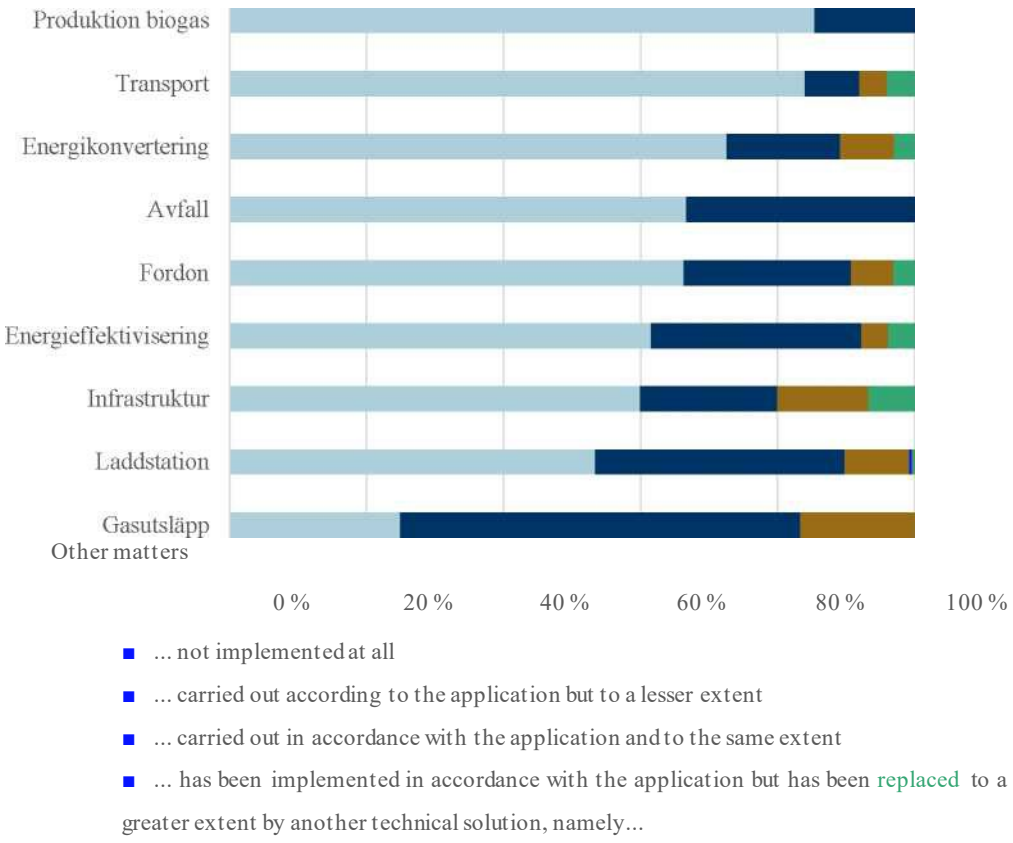


Figure 2. Answer to question: What would you think it would have been if the measure did NOT receive funding from Climate Leap? The measure had... (by category of measure) (measures granted in 2020-2022) (n = 908).

Figure 3 shows the same question by type action. The typologies are more detailed breakdowns of the measures and, as a result, the number of successful applications in each category is also lower. One observation from the figure is that the level of full additionality is higher for public charging stations than for non-public charging stations.

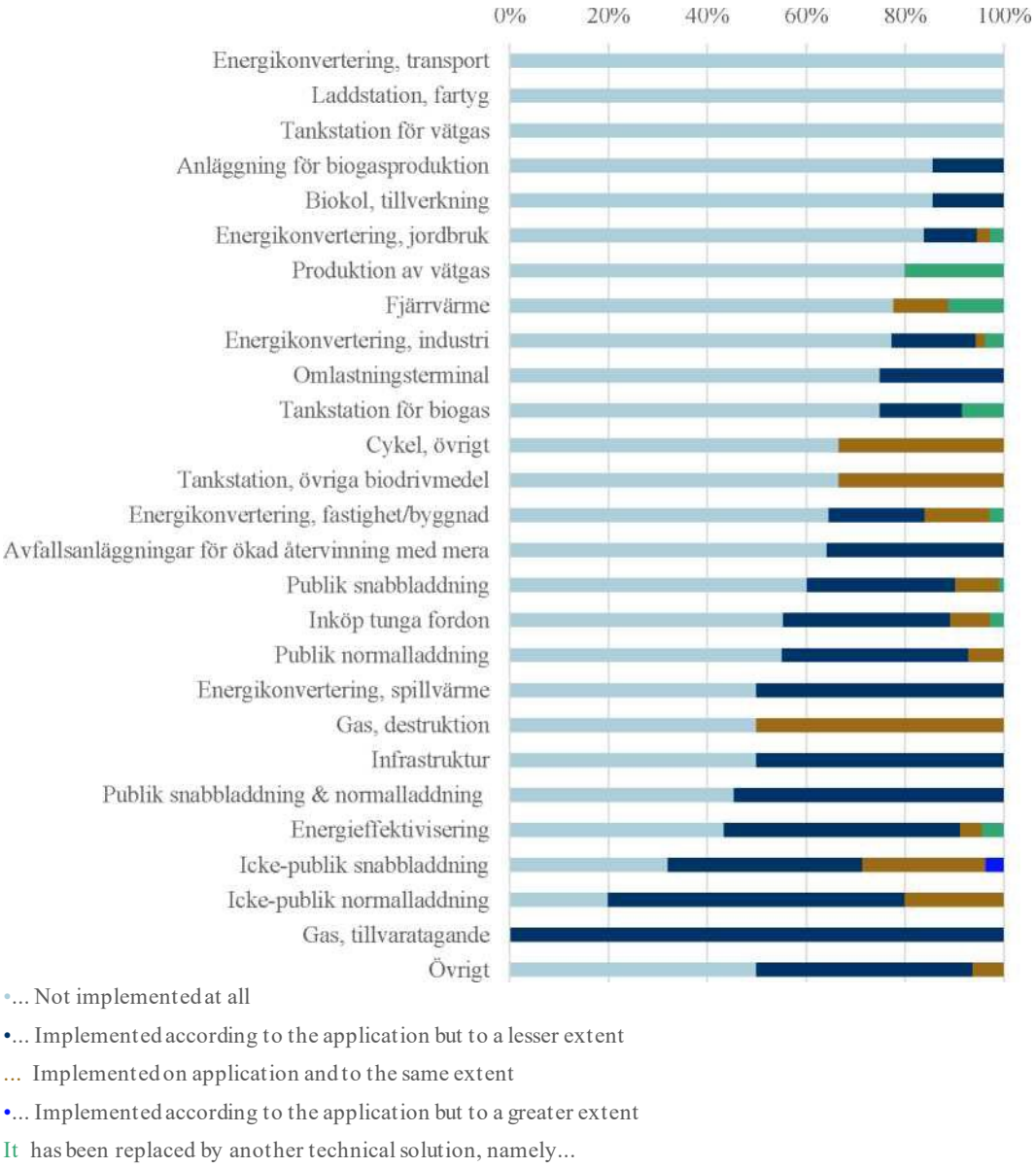


Figure 3. What would you think it would have been if the measure did NOT receive funding from Climate Leap? The measure had... (by type measure) (measures granted in 2020-2022, n = 908).

Figure 4 shows the same question by type of organisation. The largest category is enterprises, followed by municipal companies. The number of applications accepted in the other categories is lower and it is therefore difficult to draw conclusions from them.

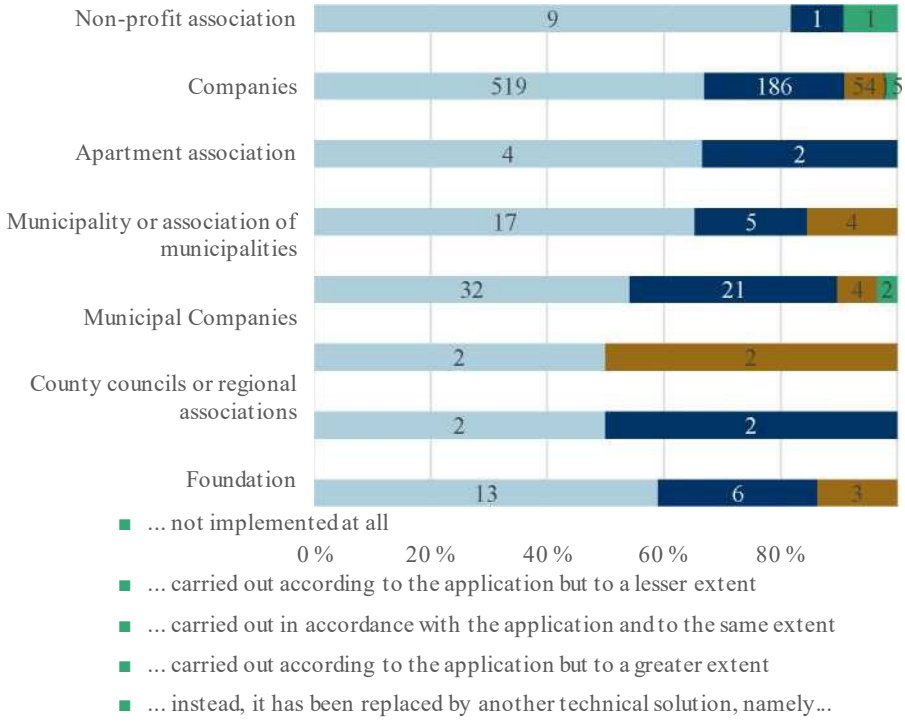


Figure 4. What would you think it would have been if the measure did NOT receive funding from Climate Leap? The measure had... (by type of organisation) (measures granted in 2020-2022, n = 907) (number of actions in the middle of the bars).

There is a link between the degree of full additionality and the level of support (see Figure 5). The measures which respondents consider would not have been implemented at all or to a lesser extent if they did not receive funding from Climate Leap are those that have received a lot of aid (on average more than SEK 5 million). This is intuitive as it may be more difficult to finance costly measures without investment aid. The measures which respondents consider had been carried out in the same or a larger extent than in the application have significantly lower aid amounts on average (less than SEK 1 million). It is worth noting that only one

respondent replied that the action had been implemented according to the application but to a larger extent.

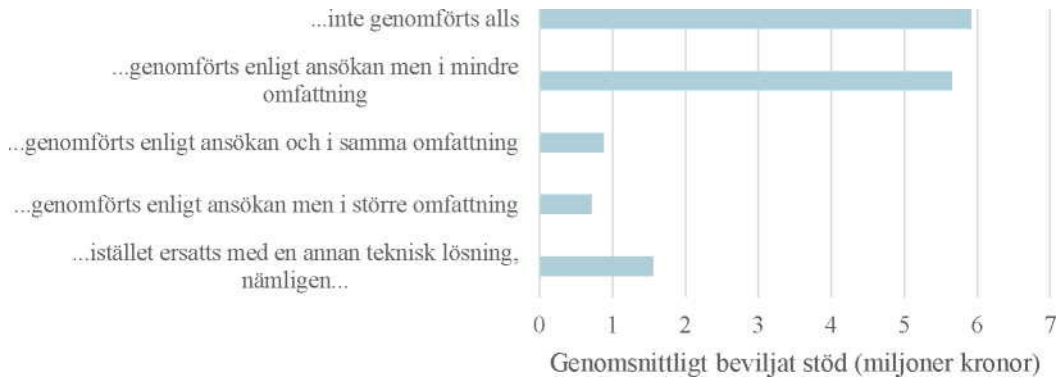


Figure 5. What would you think it would have been if the measure did NOT receive funding from Climate Leap? The measure had... (based on average aid granted per answer option) (measures granted in 2020-2022, n = 908).

Rejected applications

In the questionnaires, those whose applications were rejected have been given a position on what it has meant that the measure did not receive funding from Climate Leap. If all respondents had replied that the measure had not been implemented at all, this would mean that Climate Leap represented 100 % additionality. 56 % of those refused indicate that the measure has not been implemented when the measure was not supported by Climate Leap (see Table 4).

Table 4. What has meant that the measure has NOT received funding from Climate Leap? The measure has... (rejected measures 2020-2022)

Response options	By number	Share
... not implemented at all	426	56 %
... carried out according to the application but to a lesser extent	98	13 %
... carried out in accordance with the application and to the same extent	167	22 %
... carried out according to the application but to a greater extent	9	1 %
... plans to implement the measure/similar measure in the future	20	3 %
... instead, it has been replaced by another technical solution, namely...	42	6 %
Total	**762**	**100 %**

Notation: 'Scale' refers to the climate impact compared to what was described in the application.
The answer option "... plans to implement the measure/similar measure in the future" was not included in the 2021-2022 survey.

For rejected applications, the estimated potential additionality is lower than for successful applications. However, comparing granted and rejected measures is problematic. The

reasons for rejection are multiple, for example because they are too profitable, because they have insufficient climate benefits in relation to the investment or lack of implementation capacity. It is reasonable to assume that measures that are profitable have been implemented to a greater extent even in the absence of aid. In addition, respondents to rejected applications in the 2020 survey have had more options to choose between, which may affect the distribution of responses so that the proportion with potential full additionality is slightly lower. In addition, the response rate for granted measures is higher than for rejected measures. We consider that the additional effect should be based on granted measures for these reasons.

Implementation to a lesser extent

This section deals with the measures that would be implemented to a lesser extent without Climate Leap aid. This question can be answered whether the aid has had a certain additionality effect.

For approved applications, 25 % consider that the measure would have been implemented but to a lesser extent if they had not received support from Climate Leap (see Table 3). The corresponding number of rejected applications is 13 % (see Table 4).

Respondents who replied that they believe that the action had been implemented according to the application but to a lesser extent received a follow-up question about how much less implementation had been achieved (see Figure 6). Most say that they believe that implementation would have been around 50 % compared to the application without funding from Climate Leap.

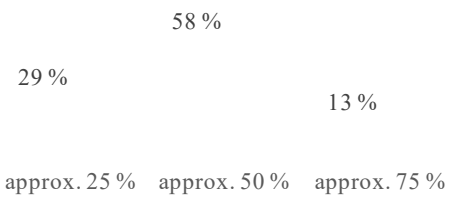


Figure 6. How much less (compared to what was described in the application) do you think that the implementation of the measure would have been if your organisation did not receive funding from Climate Leap? The action had been implemented by... (measures granted in 2020-2022, n = 222).

For rejected applications, the distribution between the response options is slightly more balanced (see Figure 7).

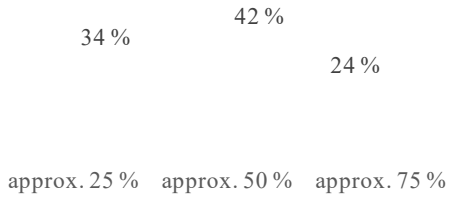


Figure 7. How much less (compared to what was described in the application) was the implementation of the measure? The action has been implemented by... (rejected measures 2020-2022, n = 97).

Implementation to the same extent

According to the respondents, 7 % of the measures granted would have been implemented to the same extent even without support from Climate Leap. Of the measures rejected, 22 % have been implemented to the same extent as in the application, according to the respondents.

Wider implementation

Few have replied that the measure has/had been implemented to a greater extent than in the application without funding from Climate Leap. For rejected applications, 9 people (1 %) replied and for successful applications only one person chose that answer. The low rate suggests that implementation to a larger extent is among the exceptions. No supplementary question was asked to respondents who indicated that the measure had/had been implemented to a greater extent without aid.

Implementation of measures by other means

2 % of the measures granted would have been replaced by another technical solution if they had not received funding from Climate Leap according to the respondents.

With regard tothe rejected applications, respondents state that 6 % of the measures have instead been replaced by another technical solution when they did not receive funding from Climate Leap. A follow-up question was asked to these respondents about the magnitude of the impact in terms of reducing climate gas emissions they consider that the alternative technical solution has resulted. Table 5 shows that 56 % indicate that the effects of the technical solution have been as high as those considered in the application.

Table 5. How much impact in terms of reducing climate gas emissions (compared to the application) do you consider that the alternative technical solution has resulted? (rejected measures 2020-2022).

Response options	By number	Share
less than 25 % of the impacts we have calculated in the application	5	12 %
approximately 25 % of the impacts we have calculated in the application	2	5 %
approximately 50 % of the impacts we have calculated in the application	8	20 %
approximately 75 % of the impacts we have calculated in the application	3	7 %
effects equal to those included in the application	23	56 %
Total	41	100 %

Implementation at other times

Respondents other than "not implemented at all" to the question of what they believe would have meant if they were not supported by Climate Leap were asked a follow-up question about how they believe that the timetable had been affected. 63 % of respondents estimate that implementation had been postponed, while 37 % believe that the measure had been implemented according to the original timetable. Those who replied that they believe that the measure had been postponed were asked a follow-up question about how much they estimate that the measure had been delayed (see Figure 8). Most respondents believe that it had been delayed by 1-2 years. This suggests that Climate Leap has frontloaded some of the climate investments, thus accelerating the pace of reaching the environmental quality objective '*Limited climate impact*'.

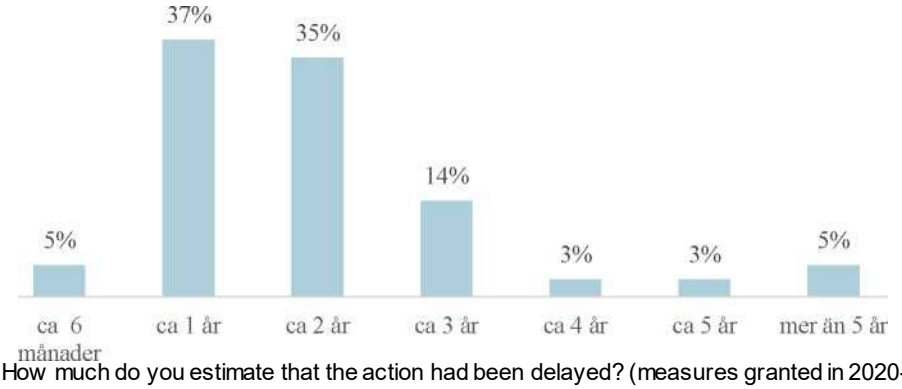


Figure 8. How much do you estimate that the action had been delayed? (measures granted in 2020-2022, n = 194).

Proportionality of the aid

In order to determine whether Climate Leap has provided support at a statutory level for the measures to be implemented, a question was asked about what would have happened to the measure had they received a small amount of aid. Each respondent received information on how much aid they received out of the total cost of measures and was asked to assess what it would have meant if they had received 10 percentage points of less aid instead (see example below).

Your organisation received 50 % funding of the total cost of the action.

What would it have been if your organisation received only 40 % funding of the total cost of the action?

Anthesis (2022) formulated this question slightly differently (what would it mean if your organisation received only a -10 % share of funding of the total cost of the action?). When comparing the responses to the survey, some respondents to the Anthesis (2022) survey seem to have interpreted the question as having received only 10 % co-financing of the cost of the measure. For this reason, only the replies to the latest survey covering the years 2021 to 2022 are presented here.

Table 6 shows that 36 % of respondents indicate that the measures had been implemented to the same extent as in the application despite the lower percentage of aid. This suggests that there is scope for reducing the aid rate. At the same time, it should be noted that the aid was at the level required by 19 % of respondents, as they state that they would not have implemented the measure at all if the grant component was reduced by 10 percentage points.

Table 6. What would it have been if your organisation had only received a 10 percentage point lower share of funding of the total cost of the action? The measure was... (measures granted in 2021-2022).

Response options	By number	Share
... not implemented at all	125	19 %
... to a lesser extent than in the application	293	45 %
... carried out to the same extent as in the application	232	36 %
Total	650	100 %

Quantification of additional emission reductions

In order to quantify the additional emission reductions, i.e. the emission reductions that would not have taken place without Climate Leap, a survey reply on what it would have meant if the measure had not received funding from Climate Leap is used as well as data on emission reductions from the Swedish Environmental Protection Agency's Klivit database. The emission figures are based on the applications and are presented as life cycle emissions.

The answer given by each respondent to the question *What do you think it would have meant if the measure NOT received funding from Climate Leap?* The question was asked only to contact persons for authorised measures. A description of how the survey responses have been translated into percentages in order to calculate the additional impacts in tonnes of CO2 equivalent is set out below. The percentages used for quantification are in brackets after the response options.

What would you think it would have been if the measure did NOT receive funding from Climate Leap? The measure was...

- ... not implemented at all (0 %)
- ... carried out according to the application but to a lesser extent
  - How much less (compared to what was described in the application) do you think that the implementation of the measure would have been if your organisation did not receive funding from Climate Leap? The action had been implemented by...
    - OM. CA 25 % (25 %)
    - OM. CA 50 % (50 %)
    - OM. CA 75 % (75 %)

... carried out according to the application and to the same extent (100 %)

... implemented according to the application but to a larger extent (100 % because there is no supplementary question for this answer option)

... instead, it has been replaced by another technical solution, namely...

- How much impact in terms of reducing climate gas emissions (compared to the application) do you consider that the alternative technical solution has resulted?
  - OM. less still 25 % of the estimated impacts in the application (12.5 %)
  - OM. CA 25 % of they impact we calculated with I application (25 %)
  - OM. CA 50 % of they impact we calculated with I application (50 %)
  - OM. CA 75 % of they impact we calculated with I application (75 %)

Based on the survey responses, the additional emission reductions per measure are calculated by multiplying 1 minus the percentage by the total emission reduction of the measure[7]. The latest available data for annual emission reductions and technical lifespan are used[8].

In the example below (Table 7), measure X is estimated to reduce emissions by a total of 1 000 kgCO_2-e. The respondent states that the measure had been implemented to a lesser extent without funding from Climate Leap. The respondent replies 25 % to the follow-up question on the extent to which the measure would have been implemented without the aid. This means that 25 % of the emission reductions would have taken place even without Climate Leap. The remaining emission reductions, 75 % or 750 kg, are considered to be the additional emission reductions to which Climate Leap has contributed.

Table 7. Example of calculation of additional emission reduction for a measure.

Action	Estimated total emission reduction (kg)	Extent without Climate Leap (share)	Additionality	Emission Reduction (kg)
X	1 000 kilograms	25 %		750 kilograms

Table 8 shows the results of the calculations of additional emission reductions for the measures assessed by respondents in the survey. The table shows that 80 % of total emission reductions are additional, i.e. they would not have been implemented without Climate Leap.

7 Total emission reduction of the measure = annual emission reduction * technical lifetime

8 The estimates are based on the final report if data are available there, otherwise data are obtained from the data established during the processing of the application.

The degree of additionality varies between the categories of measures.

Table 8. Additional emission reductions for the measures assessed by respondents in the survey based on the question "What do you think it would have meant if the measure did NOT receive funding from Climate Leap?" (measures granted 2020-2022, n = 905).

Action category	Number of actions	Estimated total emission reduction (t CO_{2-e})	Additional emission reduction (t CO_{2-e})	Proportion of additionality effect
Waste	24	2 773 329	2 299 131	83 %
Energy efficiency improvements	26	2 234 514	2 138 895	96 %
Energy conversion	369	1 331 021	1 190 261	89 %
Vehicle	98	225 231	186 230	83 %
Gas emissions	12	64 163	19 156	30 %
Infrastructure	14	607 060	456 509	75 %
Charging station	273	410 064	309 119	75 %
Production of biogas	48	4 486 165	4 050 384	90 %
Transport	25	504 209	466 245	92 %
Other matters	16	3 749 867	2 005 367	53 %
Total	**905**	**16 385 624**	**13 121 297**	**80 %**

Theproportion of additional emission reductions in Table 8 (last column) has then been used to draw conclusions on the whole population, i.e. all measures granted in the period 2020-2022. Table 9 shows that the total additional emission reductions that Climate Leap will contribute over the lifetime of the measures are around 27 million tonnes CO 2-e(or 1,7 million tonnes CO_{2-e}per year).

Table 9. Quantification of additional emission reductions for all measures supported in 2020-2022.

Action category	Number of actions	Estimated total emission reduction (t CO_{2-e})	Proportion of additional effect	Estimated additional emission reduction (t CO_{2-e})
Waste	58	11 014 858	83 %	9 131 484
Energy efficiency improvements	63	2 837 721	96 %	2 716 290
Energy conversion	800	2 389 196	89 %	2 136 530
Vehicle	207	370 857	83 %	306 639
Gas emissions	17	112 155	30 %	33 484
Infrastructure	32	1 863 750	75 %	1 401 538
Charging station	742	1 229 603	75 %	926 913
Production of biogas	107	6 762 117	90 %	6 105 252
Transport	98	2 979 583	92 %	2 755 237
Other matters	31	4 041 275	53 %	2 161 207
Total	**2155**	**33 601 115**	**80 %**	**26 907 136**

The reduction in emissions from the measures has been estimated from a life cycle perspective, i.e. emissions from extraction, processing, transformation, transport and incineration. This means that emissions occurring outside Sweden's borders are also included in the assessed emission reductions. In order to estimate the extent of the emission reductions that have been achieved in Sweden, we have used calculations from the Swedish Environmental Protection Agency (2023). These are based on how much of the measures' emission reductions occur from the combustion of fuels itself, which for all measures in Climate Leap takes place in Sweden. Table 10 shows how much of the emissions are deemed to occur during combustion according to the Swedish Environmental Protection Agency. Other emissions take place either in Sweden or abroad. The table shows that the additional emission reductions to which Climate Leap has contributed and which have taken place in Sweden are at least 19,9 million tonnes of carbon dioxide equivalent. The measures included in the measure category 'Other' have not been estimated.

Table 10. Additional emission reductions in Sweden for all measures supported in 2020-2022.

Action category	Number of actions	Additional emission reduction (t CO2-e)	Emission reduction share in Sweden (minimum)	Additional emission reduction in Sweden (t CO2-e)
Waste	58	9 131 484	7580 %	6 848 613
Energy efficiency improvements	63	2 716 290	90 %	2 444 661
Energy conversion	800	2 136 530	97 %	2 072 434
Vehicle	207	306 639	70 %	214 647
Gas emissions	17	33 484	100 %	33 484
Infrastructure	32	1 401 538	80 %	1 121 230
Charging station	742	926 913	70 %	648 839
Production of biogas	107	6 105 252	80 %	4 884 202
Transport	98	2 755 237	60 %	1 653 142

Other matters	31	2 161 207	No estimate	—
Total	**2155**	**26 907 136**	**—**	**19 921 253**

Inprevious evaluations, tables for additive emission reduction have been presented in a different way than in this section. The methodology used for quantification in previous evaluations is also slightly different from the one used here. The difference is that in this report we have calculated the total additional impact for each measure based on the survey responses. In previous evaluations, the additional effect has been calculated by type measure and by calculating the full additionality effect separately and then estimating the partial additionality effect. The partially additional effect was based in previous evaluation on how *many people* would implement the measure to a lesser extent, but did not take into account *how much smaller* scope had been achieved. The methodology used in this report is therefore more precise. In previous evaluations, emission reductions have also been presented per year instead of total over the total lifetime of the measures. In order to ensure comparability with previous evaluations, a table of fully additional emission reductions as reported in previous accounts is presented below (Table 11). The calculations are based on Figure 3, which shows how much of the measures would not have been implemented if the measure had not received funding from Climate Leap, broken down by type measure. On the basis of the percentages, the annual additional emission reduction has been calculated for each type measure. The table shows the fully-fledged additional emission reductions that Climate Leap is deemed to be able to contribute annually by type measure. The projected emission reductions per type measure have a total full additional effect of around 1,5 million tonnes of $CO_{2\text{-e}}$per year (69 %).

Table 11. Fully additional emission reductions for all measures supported in 2020-2022.

Type action	Estimated total emission reduction CO_2-e (tonnes/year)	Share of full additional effect	Calculated full additive emission reduction CO_2-e (tonnes/year)
Biogas production plant	345 691	86 %	296 307
Waste facilities for increased recycling and more	691 373	64 %	444 454
Biochar, manufacturing	29 995	86 %	25 710
Cycle, other	742	67 %	495
Energy efficiency improvements	19 543	43 %	8 497
Energy conversion, real estate/building	36 840	65 %	23 788
Energy conversion, industry	267 520	77 %	206 949
Energy conversion, agriculture	28 329	84 %	23 766
Energy conversion, waste heat	7 372	50 %	3 686
Energy conversion, transport	4 549	100 %	4 549
District heating	111 105	78 %	86 415
Gas, destruction	4 096	50 %	2 048
Gas, procurement	4 253	0 %	0
Non-public standard charging	894	20 %	179
Non-audience fast charging	16 869	32 %	5 422
Infrastructure	3 704	50 %	1 852
Purchase of heavy-duty vehicles	33 879	55 %	18 771
Charging station, ship	2 500	100 %	2 500
Transhipment terminal	44 414	75 %	33 311
Hydrogen production	16 828	80 %	13 463
Audience standard charging	14 513	55 %	7 999
Audience fast charging	45 795	60 %	27 566
Audience fast charging: normal charging	4 035	45 %	1 834
Biogas refuelling station	83 563	75 %	62 672
Hydrogen refuelling station	33 323	100 %	33 323
Fuelling station, other biofuels	1 488	67 %	992
Other matters	274 575	50 %	137 287
Total	**2 127 788**	**69 %**	**1 473 835**

Impact on employment

A further question was asked in the questionnaire which was not included in previous surveys, namely whether the aid from Climate Leap has resulted in new employment. New employment cannot be expected in all types of measures. For example, when switching from one fuel to another (energy conversion), it is unlikely that so many new jobs will be created. Table 12 shows that most (70 %) say that the aid has not led to new employment. For a total of 20 % of the measures, the aid has resulted in some form of hiring, with a new permanent

employee as the most common answer.

Table 12. Has the aid from Climate Leap resulted in new employment (full-time or part-time)? (measures granted in 2021-2022).

Response options	By number	Share
no	453	70 %
yes, a new employee for less than one year	25	4 %
yes, a new permanent worker	76	12 %
yes, two new permanent workers	8	1 %
yes, three or more new permanent workers	18	3 %
don't know	71	11 %
Total	651	100 %

New hiring has taken place both in municipal companies and in enterprises (see Figure 9)

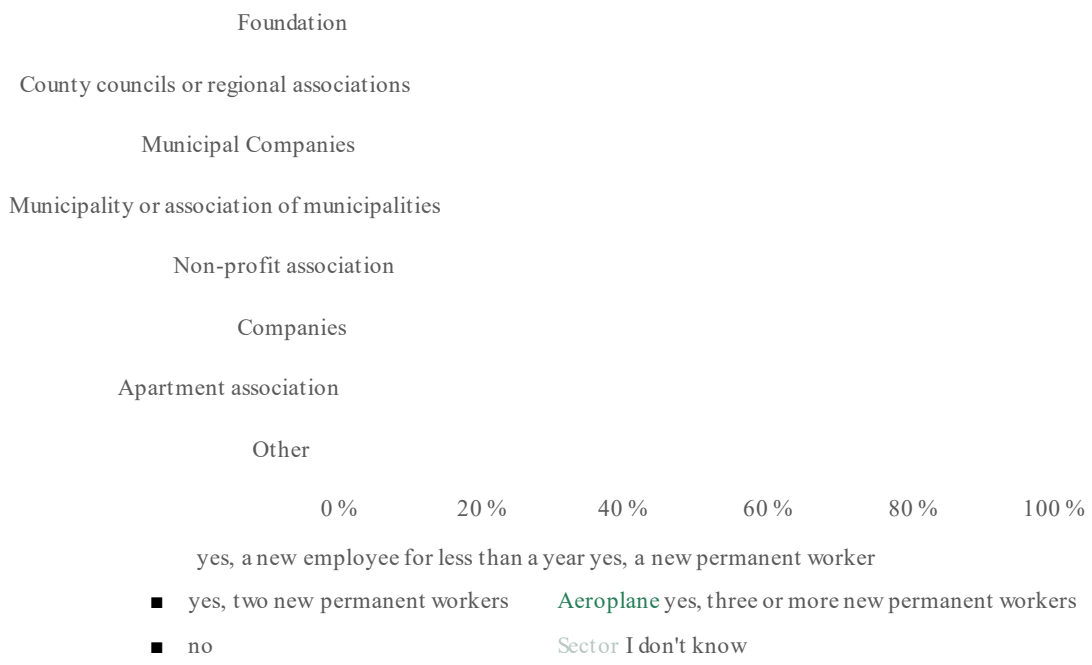


Figure 9. Has the aid from Climate Leap resulted in new employment (full-time or part-time)? (measures granted in 2021-2022, n = 651), broken down by type of organisation.

Figure 10 shows that new hiring has occurred in all policy categories, but to a lesser extent in the measure categories of energy conversion, gas emissions and charging stations than in other categories. Some of the categories have few observations (see Table 13) and it is therefore difficult to draw conclusions on them.

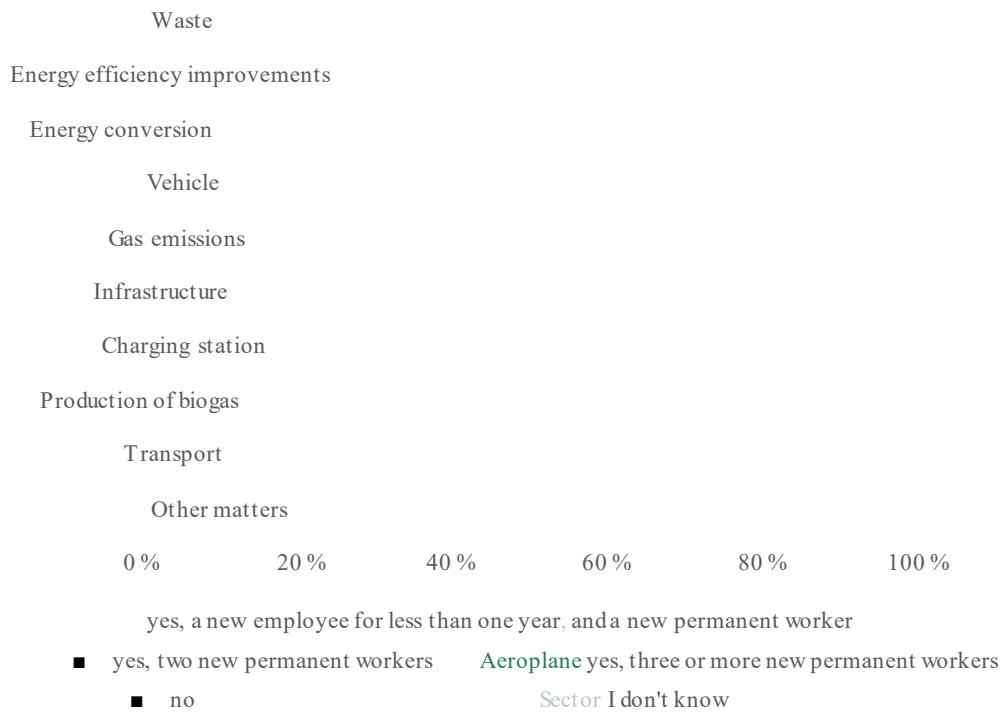


Figure 10. Has the aid from Climate Leap resulted in new employment (full-time or part-time)? (measures granted in 2021-2022, n = 651), broken down by category of measures.

Table 13. Number of answers to the question of new recruitments broken down by category of measure.

Action category	Number of replies
Waste	20
Energy efficiency improvements	20
Energy conversion	245
Vehicle	62
Gas emissions	9
Infrastructure	9
Charging station	211
Production of biogas	44
Transport	16
Other matters	15
Total	651

Market analysis

The objective of Climate Leap is to speed up the achievement of the environmental quality objective 'Limited climate impact'. To counter market failures, causing negative externalities, or to achieve policy objectives, subsidies such as Climate Leap can be used. Subsidies granted for specific objectives are likely to have less impact on competition than

subsidies directed at a particular industry or region (HM Treasury, 2007).

In order to evaluate whether Climate Leap has affected the Swedish market in general and affected markets in particular, a market analysis has been carried out. The market analysis aims to obtain a cross-sector overview of the impact of Climate Leap on the Swedish market as a whole, on competition in the sectors concerned and on the proportionality of the aid, i.e. whether the aid has been sufficient for the measures to be implemented. This part also contributes to the understanding of additionality effects. In addition to these issues, the interaction with other instruments is highlighted. Climate impacts other than emission reductions are assessed qualitatively.

The market analysis is carried out under the following types of measures: biogas, energy conversion and charging infrastructure. In consultation with the Swedish Environmental Protection Agency, priority has been given to energy conversion for industry.

Energy conversion from fossil to renewable in industry, real estate and agriculture is among the largest action categories under Climate Leap in terms of number of projects, investment amounts and greenhouse gas emission reductions. This chapter presents market analysis for the energy conversion measure industry.

The next section describes the methodology used for the market analysis. It then follows an analysis of the responses to the competition survey for all these three types of measure taken together. The remainder of the chapter is devoted to analysis for each of these types of measures: First, it describes the evolution of the market, then the analysis of proportionality. It then describes the analysis of the impact on the market/competition, including the competition part of the questionnaire for this particular type measure, followed by the analysis of additionality as well as the interaction with other instruments. Other climate impacts are then described, followed by the conclusions of the analysis of the impact on the market/competition.

Methodology description

The market analysis needs to assess the impact on the market of the aided operators compared to those not supported by Climate Leap. Ideally, beneficiaries of funding could be compared with both unsuccessful and unsuccessful organisations. Organisations which have applied for but have been rejected are similar in several respects to those awarded the grant, for example in terms of sector membership and, to a certain extent, the drivers of energy conversion by companies. However, previous analyses of additionality of targeted climate support (Natuvårdsverket, 2013)9 highlighted the possibility that companies applying for the grant received indirect incentives from the investment support programme which contributed to their higher likelihood of carrying out the climate investment, whether or not they received the grant, than non-applicants. Such indirect incentives could be that the application process prompted the organisations to carry out an energy mapping exercise which could reveal that the climate investment could deliver cost savings that were otherwise not observed. For this reason, organisations which have not applied for a grant may be considered to be an even better control group than those applying for the grant. However,

9 Climate investment programmes Klimp 2003-2012 – Limp 2003-2012 – Final report – Reporting to the Government in January 2013 ISBN 978-91-620-6517-1 (diva-portal.org)

there is a risk that those who have not applied for aid do not have the same possibilities for action either. For example, companies that do not use fossil fuels do not seek support to convert away fossil fuels either.

In addition, several organisations that have not applied for the grant are of such a size and activity that they are covered by the EU ETS and therefore do not constitute a good control group (as their investment decisions in climate action can be significantly influenced by the EU ETS policy instrument). 10

Identify the market

A key step in the market analysis to evaluate the effects on competition is the identification of the market where distortions of competition are at risk. According to the European Commission, a market can be defined in two ways: (a) product market and (b) geographic market. The European Commission writes:

'… a product market comprises all products or services which, by reason of their characteristics, their prices and their use by consumers, are regarded as interchangeable'. (EU COM *Notice on the definition of the relevant market* (97/C 372/03, Section II, point 7 and point 8)

Geographic market defines the Commission as:

'… the area in which the undertakings concerned supply the relevant products or services, in which the conditions of competition are sufficiently homogeneous and which can be distinguished from neighbouring geographical areas…'. (EU COM Notice on the definition of the relevant market (97/C 372/03, Section II, point 7 and point 8)

A combination of product and geographic markets is often the real market.

Climate Leap is a broad investment aid with a large target group and measures of a heterogeneous nature, which poses a challenge in identifying markets. In order to identify markets with a particular risk of distortion of competition, Klivit data have been processed. Based on industries in energy conversion industry, the economic sectors (SNI codes) whose constituent companies have together received the largest amounts of aid were identified.

In order to obtain a detailed picture of the market, semi-structured interviews were conducted with industry stakeholders. The selection of operators was based on the analysis of economic sectors and was checked with the Swedish Environmental Protection Agency and FossilFree Sweden. Five interviews were carried out with the beneficiary Scanbio (two interviews), as well as with the trade associations Svebio, the food businesses, and Svensk Fågel. Additional actors in the food industry and in the manufacture of construction materials have been contacted, but they have not been able to run for interview for various reasons.

In the market analysis, some data from Statistics Sweden (SCB) from the Business Database and the Business Economy Database (FEK) have been used as a basis to compare the beneficiaries of Climate Leap investment aid with the respective industry as a whole. The comparison was made on the basis of the SNI code given in Klivit. However, this form of comparison is problematic for companies operating in several sectors and having several SNI

10 Alternatively, the applicants' (including rejected) investment choices were influenced at earlier stages, such as being exposed to information about the investment aid, which, whether or not they subsequently applied, prompted them to **carry out** an energy mapping exercise.

codes. Due to the lack of access to key economic indicators in specific sectors for companies operating in several sectors, it is not possible to give an accurate picture of their market position. However, since some companies are active in more than one product market and, in some cases, in several geographic markets, comparisons between ratios such as turnover and number of employees should be interpreted with some caution.

In addition, the market analysis has processed the results of the survey for the energy conversion measure industry and obtained information from published material (web pages and reports describing the industry).

Responses to the questionnaire on effects on competition

Respondents had to consider a number of opinions on the impact of Climate Leap on the market and on competition. This question was asked only in the last survey and therefore data are available only for the years 2021-2022. Figure 11 shows that a relatively high proportion of respondents answer 'don't know' to the statements, suggesting that they have difficulty in taking a position on the questions. The statement of the respondents to a certain extent is that 'Climate Leap offers significant competitive advantages to the beneficiaries of the aid'. Relatively many also consider to some extent that "the application process is complex and costly, making it difficult for smaller operators to apply". A relatively small proportion agrees or strongly agrees that Climate Leap makes it more difficult for smaller companies to survive on the market and that Climate Leap helps to force non-aided operators to leave the market or reduce the number of employees.

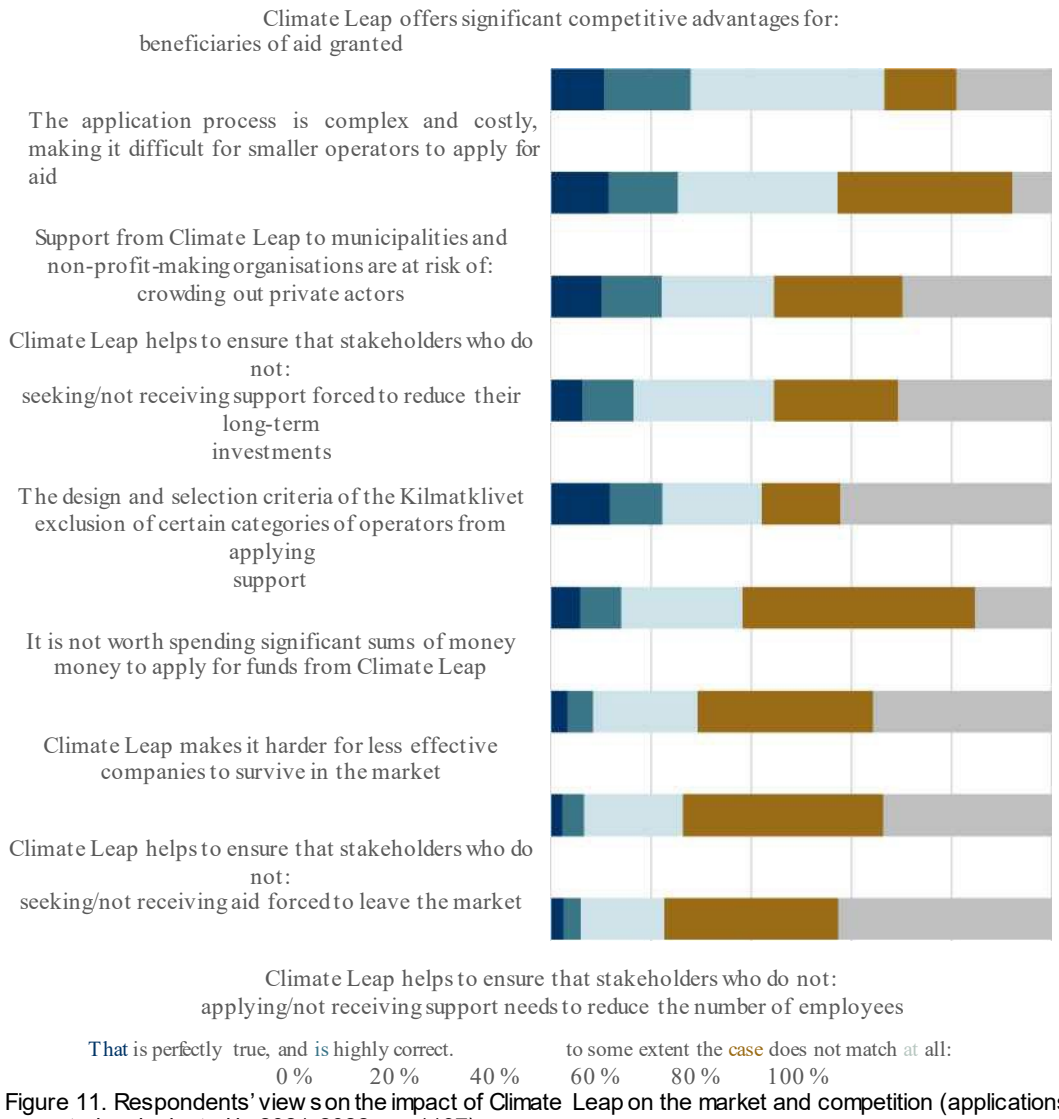


Figure 11. Respondents' views on the impact of Climate Leap on the market and competition (applications accepted and rejected in 2021-2022, n = 1197).

A review of respondents' responses to the claims has been carried out to find out whether responses differ from one group to another. The examination has been carried out on the basis of descriptive statistics, which means that any link is not statistically established.

2 shows how the responses differ between rejected and granted measures for the claim *'Climate Leap' gives significant competitive advantage to the beneficiaries of aid.* The overall pattern of all claims is that contact persons for rejected measures consider that Climate Leap has an impact on the market and competition to a greater extent than granted.

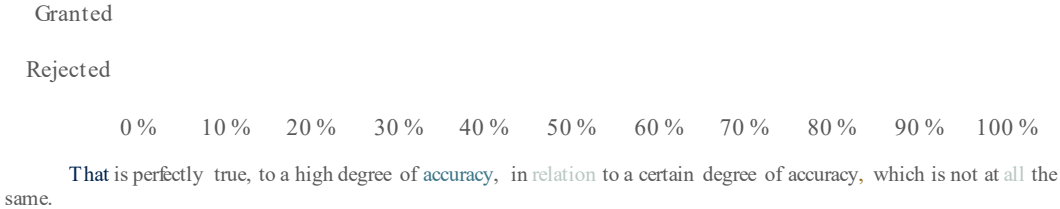


Figure 12. Climate Leap offers significant competitive advantages to beneficiaries of aid (2021-2022, n = 1194).

A comparison of the responses to the claims on the basis of the size of the company shows that small companies consider that competition is negatively affected to a greater extent than medium-sized and large companies[11]. Figure 13 shows the responses to the statement "The application process is complex and costly, making it difficult for smaller operators to apply for support based on the size of the company". The same pattern applies to all claims that respondents have taken a position on and regardless of whether all measures are considered or rejected.

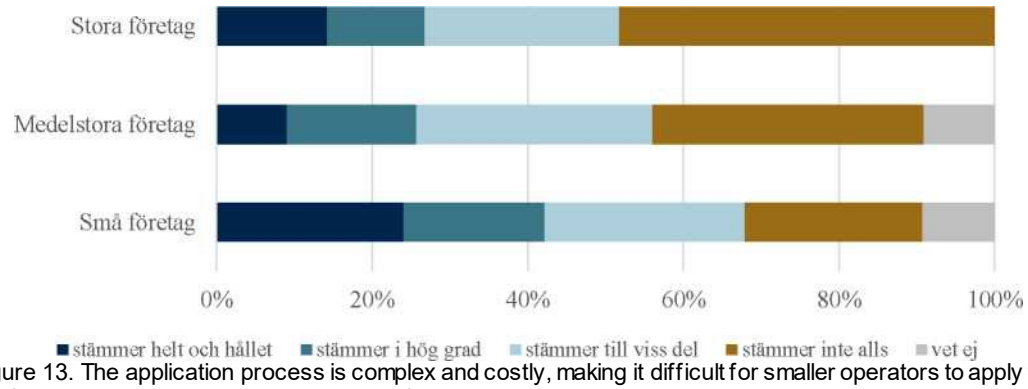


Figure 13. The application process is complex and costly, making it difficult for smaller operators to apply for aid (measures rejected 2021-2022, n = 359).

No clear differences can be seen in the breakdown of the responses to the claims by type measure or category of measure. Figure 14 shows the responses to the statement 'Climate life design and selection criteria exclude certain categories of actors from applying for support' broken down by category of measure. However, the number of responses is small for several of the categories, which makes it difficult to draw firm conclusions.

11 Small enterprise = 0-50 employees, medium enterprise = more than 50 and up to 250 employees, large enterprise = more than 250 employees

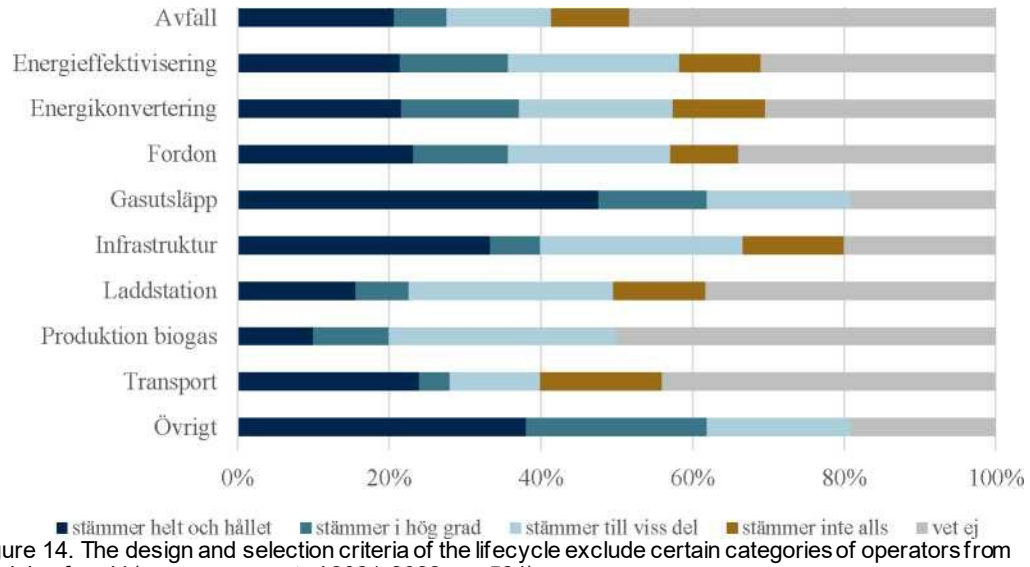


Figure 14. The design and selection criteria of the lifecycle exclude certain categories of operators from applying for aid (measures granted 2021-2022, n = 524).

Market analysis: Industrial energy conversion

Market Development

The industrial energy conversion type measure concerns switching from fossil fuels to renewable energy sources for industrial energy use. Examples of companies included in the category are chemical manufacturers, energy companies, food manufacturers and construction materials. For example, energy conversion may involve switching from oil boiler to biopanna or from LPG to biogasol. A common conversion is from oil boiler to wood pellet boiler.

There has beena steady increase in biofuels since around 1990 (Figure 15). At the same time, the use of petroleum products has decreased significantly since the start of the time series in 1970. Market developments for specific components of energy conversion industry are described in the section “Effects on competition” below.

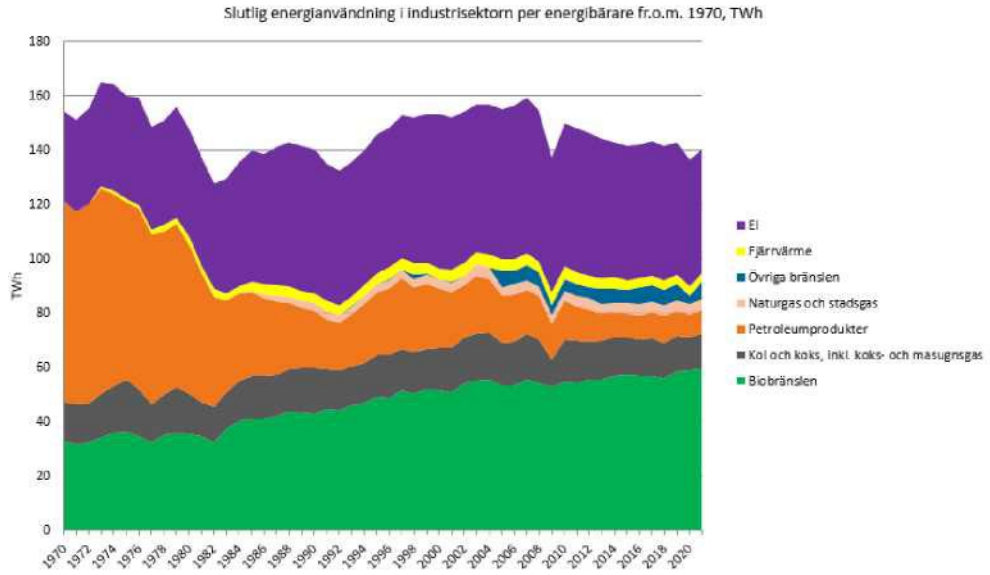


Figure 15.Final energy consumption in the industrial sector per energy carrier (from 1970, TWh). Source: Swedish Energy Agency, energy laws in digits – 20230313_webb

CROSS-SECTORAL OVERVIEW OF CLIMATE LEAP

Table 14 below describes which economic activities (two-digit SNI code) received most aid under Climate Leap under the energy conversion industrial type measure, as well as the number of aid and enterprises in the respective economic sector. These main groups include variations in the number of applications into which the total amount granted is divided, and the number of undertakings receiving aid. The main group 'Supply of electricity, gas, heating and cooling' is the main group to which the largest amount of aid has been allocated, which has been divided into a relatively small number of companies where also one of them received several aid. In the main group 'Manufacture of othernon-metallic mineral products', a significantly smaller overall amount of aid is divided between more applications, while more enterprises have received several aid.

Table 15 shows the companies that received the highest number of aid for energy conversion industry. The highest number of successful applications (14) was given to food industry companies and to enterprises in the SNI code 23 "Manufacture of othernon-metallic mineral products" (12) which is an industry which includes, among other things, the manufacture of construction materials.

Table 14. Total aid granted, number of applications approved and number of organisations granted support broken down by four sectors of activity (main group) for the years 2020-2022.

Name of economic activity	SNI code	Total aid granted (SEK)	Number of applications accepted	Number of enterprises benefiting from aid
Electricity, gas, steam and air conditioning supply	35	114 886 800	5	4
Food production	10	67 242 268	14	14
Manufacture of wood and of products of wood and cork, except furniture;	16	48 114 405	5	5
Manufacture of other non-metallic mineral products	23	41 017 392	12	7

Table 15. The organisations that received the highest number of aid under Climate Leap under the energy conversion type measure, industry for the year 2020-2022.

Organisation	Division (SNI)	Number of applications accepted	Total amount granted (SEK)
Svevia AB	08/42	8	6 119 532
NCC Industry AB[1]	32	8	5 416 070
Swerock AB	08/23	7	5 205 472
Skanska Industrial Solutions	08/42	6	4 292 958
PEAB Asfalt AB	23	5	8 933 370
Benders Sverige AB	23	2	11 249 408
Solörbioenergi Värme AB	35	2	10 637 500
BMI Produktion Sverige AB	23	2	10 485 000
Sydbelasting AB[2]	23/42	2	2 633 850

[1] likely clerical errors in Klivit, NCC Industry are included in, inter alia, SNI 23 and SNI 42. [2] Southcoatings AB, which has been part of the Veidekke group for more than 15 years, has changed its name to Veidekke Asfalt. 12

It is possible to apply for more than one aid from Climate Leap. Some of the companies receiving aid have also applied for grants in activities falling under other SNIcodes. Some companies in the sectors analysed have applied for and received eight aid from Climate Leap (Table 16). Among the five companies that received more than two aid, all of them are the leading or leading players in Sweden in the construction, operation and maintenance of road and infrastructure, all of them under the SNI code 2399. Each of them has granted between five and eight aid.

12South coatingsare renamed Veidekke Asfalt. Downloaded in 230605.

However, among these five companies, the total amounts of aid granted per undertaking are not distinguished by the corresponding amounts for other companies that have received aid (total amount granted from just under SEK 2 million to just under SEK 9 million among these five companies).

Table 16. Number of applications per organisation (typical measure industrial energy conversion) and total number of applications accepted and rejected.

	Approved	Rejected
Min	1	1
Max	8	12
Funds	1,4	1,3
Total	109	157

Proportionality

With regard to the proportionality of Climate Leap aid, that is to say, whether the aid has been sufficient for measures to be implemented, the interviews give some expression to different views. Two of the interviews describe the support as sufficient and that there is a clear value at its current level. There is a value in the aid being "proper" as it creates clear incentives for companies to explore the possibilities for energy conversion within their business. Another interview describes its level of proportionality differently on a case-by-case basis, as well as the fact that other factors such as tax levels for relevant investments affect the degree of proportionality.

The replies to the questionnaire indicate that 75 % of the measures would have been carried out at the same or lower rate even if the grant was ten percentage points lower (see Figure 16). However, the question does not capture the temporal aspect, i.e. whether the grant frontloaded the investment.

Figure 16. What would it have been if your organisation had only received a 10 percentage point lower share of funding of the total cost of the action? The measure had... (measures granted in 2021-2022, type of measure: Energy conversion, industry, n = 39).

As the interviews highlighted that proportionality varies from case to case: It is possible that such a variation may indicate an improvement potential to increase the precision of the size of the grant.

Impact on the market/competition

In the survey respondents have been asked questions about competition. The results of the

responses to the typical energy conversion measure industry indicate that Climate Leap has given a competitive advantage to the beneficiary of the aid, which does not differ significantly from all responses. Respondents also argue that the process puts small operators at a disadvantage because it is perceived as complex and costly. In addition, the design and selection criteria of Climate Leap exclude certain categories from applying. Furthermore, Climate Leap has the effect of forcing those who are refused or not seeking to reduce their long-term investment (see Figure 17).

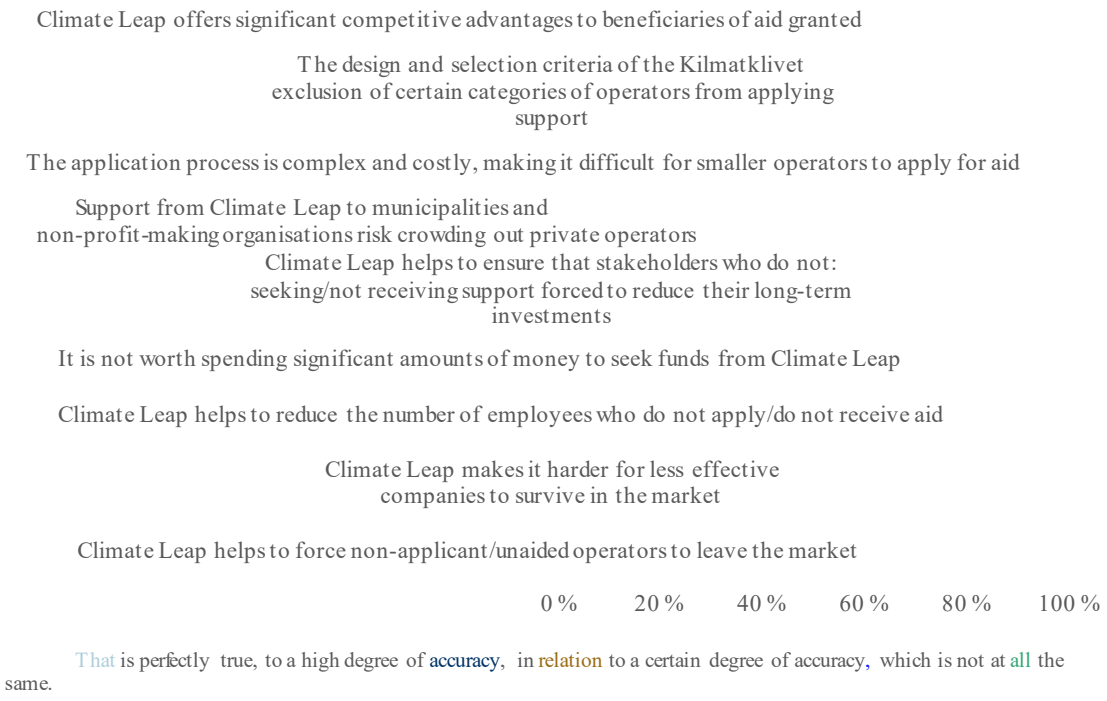


Figure 17. Questionnaire replies on the effects of competition, combined responses for granted and rejected applications (industrial energy conversion).

The replies to the questionnaire have also been broken down for those who have been granted aid or rejected. The results show that responses differ from one group to another (see Table 17).

Respondents who have been refused generally indicate that Climate Leap has a greater impact on competition than those granted aid. Question 8, it is not worth spending significant sums of money to seek funds from Climate Leap, deviates from the other competition issues in two respects. On the other hand, many respondents say that this competitive effect exists (for both respondents who have been granted and rejected). On the one hand, more of those who have been granted than those who have been refused are responsible for the effect on competition. The background to the question is that it is inspired by the same guidance as previous analyses of Climate Leap (Anthesis (2022) and WSP (2021)). However, the wording of the question is different from that of the Guide, which is more clear (the original question "It is worth spending..." has been modified to "It is *not* worth spending..."). For that reason, it is reasonable to assume that the answers to this question should be interpreted with caution.

The application process to Climate Leap is generally considered to be smooth and not

cumbersome by the beneficiaries. However, some small businesses, including one-person companies, perceive the application procedure as a certain form of barrier. The barrier is not necessarily in the sense that it is costly in time and money. Instead, the barrier consists of the fact that the application process is so different from the drivers and motivation that generally characterise these companies.

Table 17. Questionnaire replies on the effects of competition, granted and rejected applications (industrial energy conversion).

		perfectly correct	to a high degree of	partially correct	not true at all	don't know
1.Climate Leap helps to ensure that operators who do not apply for/do not receive support forced to leave the market	Granted	0 %	8 %	10 %	54 %	28 %
	Rejected	0 %	0 %	28 %	30 %	42 %
2.Climate Leap helps to ensure that operators who do not apply for/do not receive support forced to reduce their long-term investments	Granted	3 %	8 %	21 %	36 %	33 %
	Rejected	7 %	16 %	30 %	12 %	35 %
3.Climate Leap helps to ensure that operators who do not apply for/do not receive support need to reduce the number of employees	Granted	0 %	0 %	10 %	46 %	44 %
	Rejected	2 %	2 %	23 %	23 %	49 %
4.Climate Leap makes it harder for less efficient companies to: surviving on the market	Granted	3 %	3 %	21 %	41 %	33 %
	Rejected	0 %	5 %	16 %	37 %	42 %
5.Climate Leap offers significant competitive advantages to those who: received aid granted	Granted	8 %	23 %	41 %	10 %	18 %
	Rejected	16 %	7 %	47 %	7 %	23 %
6.Climate Leap support to municipalities and organisations non-profit-making risks crowding out private operators	Granted	5 %	13 %	23 %	31 %	28 %
	Rejected	9 %	12 %	14 %	30 %	35 %
7.The design of the lifecycle and selection criteria make certain exclusion of categories of operators from applying for aid	Granted	5 %	13 %	8 %	18 %	55 %
	Rejected	16 %	19 %	19 %	7 %	40 %
8.It is not worth spending significant amounts of money for: applying for funds from Climate Leap	Granted	0 %	3 %	21 %	69 %	8 %
	Rejected	7 %	7 %	33 %	37 %	16 %
9.The application process is: complex and costly makes it difficult for smaller operators to apply for support	Granted	3 %	10 %	31 %	54 %	3 %
	Rejected	14 %	14 %	40 %	28 %	5 %

Analysis of the market in sectors with the highest support

Below is a breakdown of the analysis by market segment for food production, manufacture of other non-metallic products, other mining and energy conversion.

At the beginning of the section entitled ‘Cross-sectoral overview of Climate Leap’, SNI

codes at two-digit level were presented which were mostly supported in energy conversion industry. An in-depth analysis of the data processing shows that four groups of four-digit SNIcodes and two-digit food production differ from the other grants granted by granting the highest amount of aid (both average and turnover). Therefore, the analysis focuses on these groups.

Table 18 and Table 19 show detailed information for granted undertakings in the selection of SNI codes. In particular, it shows that the SNI code 2399 'Manufacture of other non-metallic mineral products' has the largest operators in terms of average turnover under these SNI codes and with the lowest ratio of the amount of aid granted per turnover.

Table 18. Market data for organisations that received most support from Climate Leap in the years 2020-2022.

Industry	SNI code	Number of enterpris	Number of actions	Total aid amount
Food production	10	14	14	67 242 268
Operation of gravel and sand pits; mining of clays and kaolin	0812	7	15	28 123 719
Manufacture of other products of wood; manufacture of articles of cork, straw, rattan and the like *	1629	1	1	38 950 000
Manufacture of other non-metallic mineral products n.e.c.	2399	5	10	39 660 207
Manufacture of basic iron and steel and ferro-alloys	2410	1	1	26 464 500
Total		28	41	200 440 694

* The company supported under SNI code 1629 also has activities in the SNI code 35 "Supply of electricity, gas, heating and cooling".

Table 19. Continuation of market data for organisations most supported by Climate Leap in the years 2020-2022.

Industry	SNI code	Aid-amount SEK (funds)	Annual turnover SEK (resources)[2]	Amount of aid/annual turnover
Food production	10	4 803	548 754	0.88 %
Operation of gravel and sand pits; mining of clays and kaolin	0812	1 875	4 527 440	0.04 %
Manufacture of other products of wood; manufacture of articles of cork, straw, rattan and the like [1]	1629	38 950	842 878	4.62 %
Manufacture of othernon-metallic mineral products n.e.c.	2399	3 966	30 189 074	0.01 %
Manufacture of basic iron and steel and ferro-alloys	2410	26 465	12 565 000	0.21 %
Total		4 889	9 533 970	0.05 %

Notation: [1] the company that received support under SNI code 1629 also has activities in SNI code 35 "Supply of electricity, gas, heating and cooling". [2] average per successful application. Enterprises that received more than one aid are counted several times.

The organisations supported in the selected sectors of activity are located in more than half of Sweden's counties (Table 20). The largest number of organisations that have received aid can be found under the SNI code 10, i.e. food producers. The number of aid granted is the highest in sand, gravel and mountain mining (SNI code 0812) and in the food industry. The geographical spread is wide for those economic activities in which more than one application has been accepted.

Table 20. Number of applications approved broken down by selected SNI codes and by county for the years 2020-2022.

County	10	0812	1629	2399	2410	Total
Blekinge County	1					1
Dalarna County	1			1	1	3
Halland County	2	3		1		6
Jönköping County		2	1			3
Kalmar County	2	1				3
Kronoberg County				1		1
The county of Norrbotten,		1		2		3
Skåne County	3	2		1		6
Stockholm County	1			2		3
Södermanland County		2				2
Västernorrland County				1		1
Västra Götaland County	4	1				5
Örebro County		1		1		2
Östergötland County		2				2
Total number of applications	**14**	15	1	10	1	41
Number of counties	**7**	**9**	**1**	**8**	**1**	**14**

FOOD PRODUCTION (SNI CODE 10)

The food industry uses a lot of gas, mainly for heating and cooling. Both gas and oil can be replaced. Support from Climate Leap has mostly been used to replace fossil fuels for heating with, for example, pellets.

Several external factors have affected the food sector in recent years. The pandemic and the war in Ukraine have driven cost increases in particular in inputs such as energy. Tax incentives on biogas have had an impact on the market, which has led many operators to switch to biogas. There is concern that the Swedish exemption for bio-based fuels will not be defended. Food businesses monitor how the new government will manage Climate Leap in the sense that the government has deprioritised fossil-free fuels.

Food production represents several distinct sub-markets (product markets such as bird slaughterhouses, meat slaughterhouses) and geographic markets (e.g. dairies).
In general, the food sector is characterised by the dominance of several of its sub-markets by a few large players. There is relatively strong competition from foreign producers – with some exceptions such as milk and some other dairy products where imports represent relatively small volumes. Several food products are substitutes to varying degrees, which has a positive impact on competition. For example, the current recession has encouraged the sale of bird products at the expense of other meat products.

Data from Klivit show that the food businesses benefiting from the aid include slaughterhouses, bird producers, bakeries, dairies, confectionery and animal feed companies. Several food production sub-sectors are characterised by high market concentration among operators based in Sweden, i.e. a relatively small number of operators with significant

market share. In bird production there are both a few small producers and a few large producers competing with similar products. Slaughterhouses and the dairy industry are both characterised by high market concentration. In addition, the dairy industry has geographical market segmentation with sales mainly within the respective production area.

While different parts of the mix of climate instruments are perceived differently across companies, Climate Leap is generally appreciated across the food industry as a whole. Companies have seen Climate Leap as an enabler and there is widespread support for its continuation among both small and large companies. Climate Leap is well known in the sector and many companies apply for the aid. Climate Leap is perceived as clean and simple and it creates a high level of trust. Companies believe that the aid provides a very good climate benefit.

Respondents in the food sector argue that there are no indications that Climate Leap would have an impact on competition. On the other hand, there are indications that the high energy price may have led companies to go bankrupt while those who have made climate investments have performed better. Climate Leap can provide competitive advantages for the beneficiaries as they gain a better understanding and knowledge of their energy system. For example, companies that take care of their waste heat increase resilience through lower energy use.

Climate Leap is also considered to equalise differences between large companies with economies of scale (from negotiating contracts for different types of energy to better mapping their energy consumption) and smaller companies that are incentivised by Climate Leap to map their energy situation. It is not a widespread perception in the sector that Climate Leap has a complex process. On the other hand, conversions of different kinds are perceived to be difficult of varying degrees. For example, it is perceived to be more difficult to recover waste heat than to use oil.

The interviews highlighted that Sweden has relatively strict animal husbandry rules which put Swedish producers at a cost disadvantage compared to foreign producers who have Sweden as a market. This applies in particular to bird and meat production.

OTHER NON-METALLIC MINERAL PRODUCTS (SNI 2399) 13

One of the sectors that received relatively large support for energy conversion from Climate Leap is 'Manufacture of other non-metallic mineral products' (SNI code 2399). The industry includes companies that manufacture, for example, goods from stone (mica, graphite), carbon and asphalt fibres, asphalt mills and other asphalt goods.

The products produced in the industry are mainly used as inputs in the construction sector.

The measures granted in the sector other non-metallic mineral products concerned aid for energy conversion into electricity, bio-oil and pellets. Among the beneficiaries, there is a company that manufactures insulation and silencing products from wood fibres. The aid has been paid to pellet panels and is the largest under SNI code 2399 with an aid amount of approximately 18 million. In relation to the type measure as a whole, the seventh largest aid in energy conversion is industry.

13 Data retrieved from Klivit and referred to in the section also include companies that, according to Klivit, have activities in 'construction works' when the same company name also appears in 2399.

In addition, there is support for the replacement of fuel for the heating of premises and for switching to fossil-free fuels in asphalt plants and electrically operated asphalt starves (working machinery). Aid has been paid to both small and large companies for investments in different locations in the country. The largest number of aid has been paid to large companies. Large companies include large companies active in the construction industry. The aid amounts were between SEK 0,1 million and SEK 18 million, the average of which was approximately SEK 2,3 million and the median of approximately SEK 1 million. The electrically driven asphalt starves are located at the lower end of the range, while the larger aid for converting buildings into pellet panels and bio-oil.

There are about forty companies in the industry (SNI code 2399) and two of them employ 200 or more employees. Figure 18 shows the breakdown by number of employees.

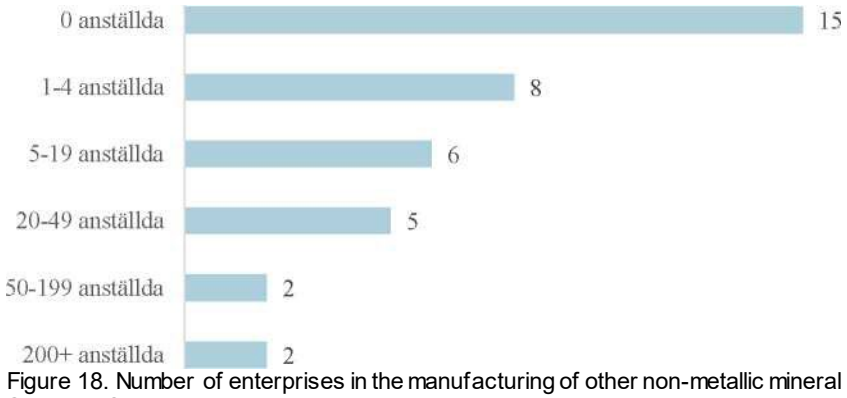


Figure 18. Number of enterprises in the manufacturing of other non-metallic mineral products, 2022. Source: Statistics Central Bureau, Business Database.

The number of large enterprises is likely to be more than those included in the figure above as the companies active in "Manufacture of other non-metallic mineral products" may be included in any other SNI code. The larger construction companies are often total suppliers of all products and services in construction projects, which means that they have a high degree of vertical integration14. This can be the case where construction companies have both mountainous areas, concrete production and solid asphalt works. For example, NCC, Peab, Skanska, Svevia and Veidekke produce asphalt at various locations in the country. Table 15, which shows aid broken down by company, includes several of the larger construction companies in Sweden. In addition, it appears that the same company can be included in both 'Other mining and quarrying' (SNI code 08), under 'Manufacture of ready-mixed concrete' (SNI code 2363) and belonging to the construction sector (SNI code 42, 'Construction works'). The above circumstances mean that the beneficiaries are either active on any product market for construction materials or on the market for the construction of infrastructure.

The market for construction materials consists of a large number of product markets, some of which are characterised by a high concentration and a lack of price transparency according to the Competition Authority (Konkurrensverket, 2018). However, construction materials fall under different SNI codes. For example, the large construction materials

14 Vertical integration is when companies integrate parts of the supply chain on their own account, rather than buying inputs from external subcontractors.

concrete and steel are not included[15] in the SNI code 2399 "Manufacture of other non-metallic mineral products". The markets for these materials are being raised in other contexts which were concentrated. One of the product markets with a high market concentration and partly found under SNI code 2399 is "Supplementary materials (discs, insulation, glass, etc.)"[16]. Otherwise, there is no high market concentration in the markets for the products covered by the SNI code 2399. In addition, construction materials often face competition from foreign manufacturers and limit the market power of those receiving support through Climate Leap.

On the other hand, the market concentration in construction is high. The Competition Authority has drawn attention to the fact that market concentration and vertical integration are high in the Swedish construction sector. There are four truly large companies on the Swedish construction market which are Peab, Skanska, NCC and JM. The first three are large in both residential and civil engineering.
However, the concentration has decreased over time. The Competition Authority notes that the market concentration of the four truly large construction companies decreased from 72 % to 65 % between 2011 and 2016. Several larger construction companies (NCC, Skanska, Peab) have received support from Climate Leap and this could mean that they have been able to strengthen their market power. At the same time, the aid amounts are relatively small and represent a very small proportion of turnover[17]. In the construction market, the procurement procedure for construction projects maintains competition for contracts, but vertical integration means that the pricing of individual products is not transparent. The aid amounts have been allocated to both small and large enterprises. The above means that Climate Leap is not considered to distort competition.

EXTRACTION OF SAND GRAVEL AND MOUNTAINS (SNI CODE 0812)[18]

The sector includes the extraction of sand, gravel and mountains. Those raw materials are used, inter alia, in the manufacture of concrete, approximately 85 % of which is composed of sand, gravel, crushed rock and water and about 15 % of cement.

The most common energy conversion in industry supported by Climate Leap is the electrification of mountain ranges. This may involve electrification of a crusher or replacement of work machinery powered by electricity. Aid has also been granted to innovative measures such as investment in track-borne cable rooms for the transmission of current to mobile crushers, which are usually dependent on diesel. The aid amounts ranged from SEK 0,2 million to SEK 16,6 million, with an average of approximately SEK 2,1 million and the median of approximately SEK 0,8 million.

Around 400 companies are active in the extraction of sand, gravel and mountains. More than half of them have no employees and there are no companies with more than 200 employees. As can be seen from the description of the industry "Manufacture of other non-metallic

15 It is worth mentioning that the steel industry is part of the EU ETS and therefore does not qualify for support from Climate Leap. However, for waste heat, exceptions are made in Climate Leap.

16 The Competition Authority refers to a study carried out by Copenhagen Economics (CE) on behalf of the Competition Authority in 2009 as part of the work on a government mandate concerning effective competition measures.

17 Excluding the largest aid in the industry with SNI code 2399 granted for energy conversion to pellet panels for a company producing insulation and silencing products from wood fibres.

18 Data retrieved from Klivit and referred to in the section also include companies that, according to Klivit, have activities in 'construction works' when the same company name appears in 0812 and 42.

mineral products" (SNI code 2399), extraction and rock crushing activities can be vertically integrated in construction companies and therefore not all companies with activity in data for the industry as a whole are visible (see Figure 19).

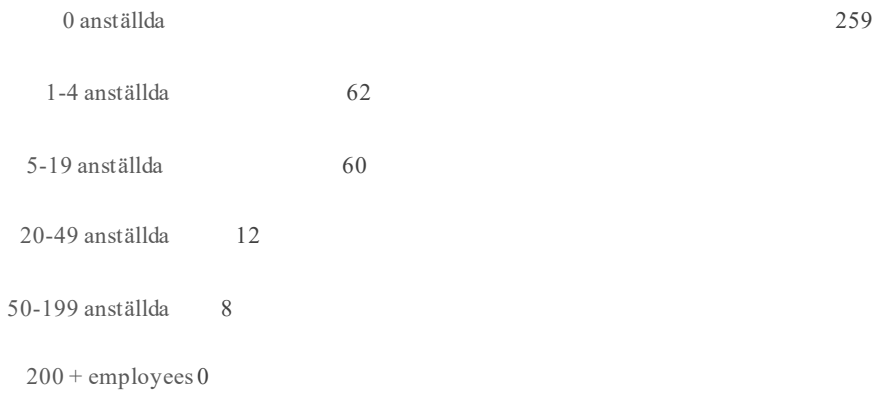


Figure 19. Number of enterprises in the sand, gravel and mountain mining industry (SNI code 0812), 2022. Source: Statistics Central Bureau, Business Database.

There is a geographical distribution of sand, gravel and mountain mining companies. This is due to high transport costs relative to the value of the goods. The markets can therefore be described to a large extent as local.

The geographical spread is also high among supported companies. Aid has been granted to measures in 12 counties. In total, aid has been granted to eight companies, of which three have fewer than 50 employees. There are a number of relatively large players in terms of turnover of the undertakings to which aid has been granted. The turnover is in the range from 23 million to

SEK 24 billion per year. The three companies whose annual turnover exceeds SEK 1 billion are large construction companies. However, the aid granted does not stand out in size (twelve of the grants are below one million SEK and only one exceeds SEK 10 million of just under SEK 17 million). On average, the aid amounted to approximately SEK 2,1 million. The largest aid under SNI code 0812 was granted to a company with approximately SEK 500 million in annual turnover for the energy conversion of dryers.

ENERGY CONVERSION (SNI CODE 35 SUPPLY OF ELECTRICITY GAS HEAT, AND SNI CODE 1629 OTHER TIMBER PRODUCTION; MANUFACTURE OF ARTICLES OF CORK, STRAW, RATTAN O.D.)

Climate Leap's support for energy conversion means that oil and gas, but also coal on the energy conversion market, have been replaced by, for example, pellets.

The interviews highlight that the energy market is generally clearly influenced by the global economic situation with the war in Ukraine, through reduced exports of Russian pellets and a sharp increase in electricity prices. The latter has meant that there has been a deficit of biofuels on the market. The reduction in production from Swedish sawmills is highlighted as an additional driver for increasing the price of raw materials, including pellets, and thus

increasing the price of the final product on the market.

Table 21 provides a broad overview of actors involved in different ways in the supply of electricity, gas and heat. Support to companies that help other energy conversion activities increase the demand of suppliers of such products and services. Among the suppliers of holistic solutions, the largest (in terms of turnover and employees) are Adven/Heat values, Solör Bioenergy, Nevel and Veolia. These work with both large, small and medium-sized enterprises (SMEs), both inside and outside the EU ETS. Bktech, VUAB Bioenergi and Cleanburn are examples of smaller suppliers focusing in particular on SMEs. The category of energy consultants can act both as a subcontractor and as an adviser. Energy consultants include the major consultancy firms AFRY, Sweco, WSP and Ramboll, as well as smaller energy consultants. The category of energy companies can offer holistic solutions and be subcontractors. Examples are Eon and Vattenfall on the national market, as well as municipal energy companies operating in their own municipality. In the period 2019-2021, some consolidation took place among major players when Adven and Heat Values were merged and St1 purchased Eon Biofor. However, the total number of operators is estimated to be largely unchanged (Anthesis, 2022).

Table 21. Operators involved in the supply of electricity gas and heat.

Type of operator	Examples of actors
Overarching solutions	Adven (includes heat values), Solör Bioenergy, Nevel, Veolia, Bktech, VUAB Bioenergy
Holistic solutions or subcontractors	Cleanburn, Petrobio, WTS.
Subcontractors, energy consultants	AFRY, Sweco, WSP, Ramboll
Major energy companies	Vattenfall, Eon
Gas distributors	Weum gas
Adviser	Abubo, Municipal Energy and Climate Adviser, Regional Energy Agency Municipality
Other actors	SCA, St1 Biogas AB

From the interviews, there are four to five major suppliers of pellet boilers that can work across the country as well as 60-70 pellet factories throughout the country. The market is described as strong and highly competitive, with increased interest in pellets, including from the process industry.

The results of the interviews do not indicate that competition is distorted in this sector. The demand-side interview of the energy conversion industry describes that the supply side is characterised by many activities competing with each other for customers.

The interviews describe that non-aided activities could be disadvantaged by the fact that they did not receive aid from Climate Leap. At the same time, the interviews describe that it does not believe that the beneficiaries of Climate Leap aid have obtained significant competitive advantages. However, it points to difficulties for companies with one or few employees to apply for funds under Climate Leap, both because of a lack of motivation, and a lack of resources in the form of specialised staff to write applications.

At the same time, it is conceivable that the design of Climate Leap has a positive impact on competition in the sense that smaller undertakings are able to receive grants which represent a larger proportion of the total investment amount than larger undertakings. This is addressed by the group exemption regulation (EU State aid rules). The Climate Leap Regulation states that Member States need to comply with these rules.

Analysis of Klivit data shows that five applications to three companies[19] have been granted aid under SNI code 35 under the typical energy conversion measure industry. Two of the companies received two grants each, for activities in different counties. It is noteworthy that the totals of the amounts per successful application are large and range from SEK 1,7 million to SEK 40 million. Among the five applications accepted are two large and one smaller player in terms of turnover.

In addition, there is an additional beneficiary of large amounts of aid, Scandbio, which operates under both the SNI code 1629 and the SNI code 35.20 Scandbio is a major player, with large sales of pellets. However, the subsidy concerns the drying of wood material as an alternative to pellets, as an energy carrier for use in boilers as an alternative to oil. Torrefication is a technology under market introduction. Although it is not an established technology, it can be considered as a product substitute for other energy sources and thus a competing product.

The market is characterised by many large and smaller players. However, the aid went to only three of these companies, as well as to Scanbio, which we regard as an operator on the same market. The interviews highlight different perspectives on the competitive situation in the sector, but the combined interpretation is that Climate Leap does not distort competition. As a result, there are no indications that Climate Leap caused significant distortions of competition on the market by suppliers of energy conversion solutions.

Additionality

The evaluation shall also answer the question whether the measures would have been implemented without Climate Leap. The survey responses for the industrial energy conversion type measure show that around one fifth of the measures granted had been implemented in the same (2 %) or to a lesser extent (17 %). Around 77 % had not implemented it at all (Table 22). The answers can be compared to the answers given in Figure 16, to the question “What would it mean if your organisation received a 10 percentage point lower contribution rate of the total cost of the action? Around 26 % replied that the investment would not have been carried out at all. That is to say, more would have implemented the measure in the event of a reduction in the aid than in the absence of any aid.

Table 22. What would you think it would have been if the measure did NOT receive funding from Climate Leap? The measure was... (typical measure energy conversion in industry).

Response options	By number	Share

19 The companies Adven AB and Adven energy solutions AB ceased to exist on 16-05-2023 when they merged with Adven Sverige AB. For the purposes of the market analysis, we consider them to be an undertaking. However, Scandbio20 is classified only under SIN code 1629 in Klivit.

... not implemented at all	41	77 %
... carried out according to the application but to a lesser extent	9	17 %
... carried out in accordance with the application and to the same extent	1	2 %
... instead, it has been replaced by another technical solution, namely...	2	4 %
Total	53	100 %

From the interviews, it appears that for, inter alia, energy conversion providers, Climate Leap is considered to provide additionality. The aid is considered to be often necessary for companies to implement various energy conversion measures, especially for smaller companies. It is argued that the additionality of Climate Leap can be important in cases where new investments in "old" technology are cheap, and where a larger investment with significant climate benefits is not considered economically justifiable without support from, for example, Climate Leap. At the same time, it underlines that other factors have an impact on its additionality, such as tax levels on current investments. In conclusion, the replies to the questionnaire and the interviews confirm the additionality of the support.

Interaction with other instruments

In Sweden, there are many climate instruments and information measures that complement and partly overlap with Climate Leap. Targeted investment aid, taxes, other emission regulations and information measures such as energy certification and various types of environmental certification are a context that can strengthen and in some cases overlap with Climate Leap. Dual management contributes to the difficulty of measuring efficiency and cost-effectiveness. At the same time, synergies between instruments can contribute to efficiency and cost-effectiveness, for example by addressing different market failures. Climate Leap has a strength to target widely different segments of greenhouse gas emitters who can also address hard-to-reach emissions that are not effectively addressed by other instruments. In the application to Climate Leap, applicants must indicate whether they have received or applied for other aid. Therefore, there should be no cases of overlapping aid for the same measure.

There may be certain types of buildings at beneficiaries that need energy declaration (an incentive for energy efficiency). In these cases, energy certification and support from Climate Leap for energy conversion can complement each other.

The interviews highlight that among energy conversion providers, for example, several instruments are important drivers for energy conversion. Important examples are the CO2 tax and the phasing out of the tax rebate for the fossil fuel industry. Both the CO2 tax and the phasing out of the industrial tax rebate can promote a measure while the measure is further promoted by the provision of Climate Leap support.

The Climate Premium was introduced in October 2020 and is a state grant for the introduction of, inter alia, electrically powered working machinery. Electrically powered working machines are motorised equipment or tractors within the meaning of the Road Traffic Definitions Act that have a net power of more than 15 kW and are powered solely by electrical energy from a fuel cell, a battery or an external source. Climate Leap can also provide aid for investment in electrically powered working machinery. As a result, these

instruments partly affect the same measures. The aid from the Climate premium amounts to 20 % of the purchase price, however, up to a maximum of 40 % of the additional cost compared to a conventional machine. In the field of energy conversion, the Climate Leap industry has granted aid to work machinery (asphalt rollers, electric truck, electric excavator, electric excavator) of between 60 % and 40 % of the investment cost if the work machine replaces an existing diesel engine21.

Industriklivet is another targeted aid that can finance partly the same measures as Climate Leap. Introduced in 2018, Industriklivet is an instrument for the industrial climate transition. It aims to support efforts to reduce process-related greenhouse gas emissions and measures that contribute to negative emissions (which Climate Leap can also support). Industriklivet will fund technological leap and support industry's ambition to transform. Unlike Climate Leap, Industriklivet also provides support for research and development, preparatory studies, testing and demonstration, as well as grants aid to companies covered by the EU ETS. In this respect, investment aid is complementary in that it targets different situations where negative incentives such as taxes may have insufficient governance given, for example, what is considered politically acceptable level of taxation. The interviews highlight that, for example, for energy conversion providers, Industriklivet is an important instrument.

Investment aid for biogas is a business aid under the rural development programme. This investment aid overlaps with Climate Leap in the sense that farmers and rural businesses can receive support from the RDP for the construction of a plant for the production and use of manure based biogas, or alternatively for upgrading or for the construction of a plant for the management of digestate. Climate Leap thus partly overlaps with the RDP support for biogas because the aid granted under Climate Leap under the type measure biogas production plant is granted both to undertakings active in agriculture and to undertakings in other sectors. As mentioned above, applicants for aid from Climate Leap need to indicate whether they have applied for other aid for the same measure, which should mean that the same measure cannot receive support from both Climate Leap and the Rural Development Programme.

The interviews with the food industry highlight that information on the environmental impact of products is an important signal on the market. Consumers and buyers, such as wholesalers, are putting great and increasing demands on green supply chains, in which case emissions of climate gases play a role.

The instruments that affect construction and building equipment markets in22 addition to Climate Leap are the Swedish Transport Administration's climate requirements for the construction of transport infrastructure. Climate requirements in the contracts have been gradually included in procurement procedures and from 2016 the Swedish Transport Administration's guideline "climate requirements in planning, construction, maintenance and technical approved railway material" applies. 23 The contractor contracted by the Transport Administration in major projects needs to be able to demonstrate that the construction project reduced greenhouse gas emissions by a certain percentage compared to a reference level. The reduction can be achieved in various ways in the implementation of the contract. In this context, climate-enhanced construction materials supported by Climate

21 If the machine is new, the additional cost is eligible.
22 Contained in SNI codes 0812 and 2399
23 For more information, please refer to Microsoft Word – Swedish Transport Administration's climate requirements in procurement procedures (infrasweden.now)

Leap can be used, such as asphalt produced in asphalt plants with biofuels instead of fossil oil, fossil-free transport, fossil-free working machinery and filling materials supplied by a fossil-free rock.

Larger municipalities also impose climate requirements, but the design may differ from that of the Transport Administration, for example, by requiring certain technologies. However, the Implikation is the same as the Swedish Transport Administration's climate requirements and requires the contractor to demonstrate that the required climate requirements are met. Another important driver is the requirement for a climate declaration for new buildings introduced on 1 January 2022. The requirement for a climate declaration means that the developer must be able to verify the greenhouse gas emissions of the new building for different building materials using the EPD (Environmental Product Declaration). This means that new segments of the building materials industry (e.g. insulation, prefabricated concrete elements) need to document the greenhouse gas emissions of their products.

The aid for activities with rocks relates to the regulation of extraction of natural gravel (Environmental Code, Chapter 9). For example, in 1996, tax was introduced on the collection of natural gravel. The tax has been gradually increased. This has created incentives to crush mountains, which is a more costly process.24

At the same time, however, the interviews pointed out that Climate Leap's characteristic of being particularly effective when operating conditions in relation to capital conditions are not favourable to those wishing to invest in, for example, a pellet panel. For example, the use of gas burners is described as an example where continued investment in the "old" gas burner technology is relatively small and a case where Climate Leap thus brings specific benefits.

Finally, the possibility of applying for support from multiple sources, or the complementarity of different instruments, should make a positive contribution to the effectiveness of the climate transition. For some emissions, disincentive policies (such as taxes) may have relatively limited conditions to be effective. For example, emissions that require relatively large investments to reduce. In such cases, Climate Leap seems to be a particularly important instrument. There is a risk of overlap under the industrial energy conversion measure between Climate Leap and Climate Premium, which negatively affects additionality. As relatively few aid has been granted for electric working machinery, the overall assessment of additionality in energy conversion is not affected by industry. In some cases, the additionality of Climate Leap is low in the sense that investments have taken place anyway, but the analysis suggests that even in such cases Climate Leap has accelerated the transition.

Climate impacts other than emission reductions

Indirect effects of the aid include technology diffusion, which in itself can contribute to the reduction of greenhouse gas emissions. One way of contributing to technology diffusion is the dissemination of information on climate investments undertaken25. See Figure 20 for how the results of the survey break down on how respondents' own actions have been brought to the attention of others. A few (12 %) report that the measure was mentioned in the press/media and some others (8 %) indicate that they were contacted by the press/media. About a quarter each indicated that they were contacted by other individuals and other

24 In-depth evaluation of good quality groundwater 2023 (sgu.se)

25 See Rogers (2003) and Struben and Sterman (2008) for research results which have shown that communication on new technologies is a necessary aspect to achieve technology diffusion.

organisations respectively. A fifth state that they are not aware of any dissemination of information.

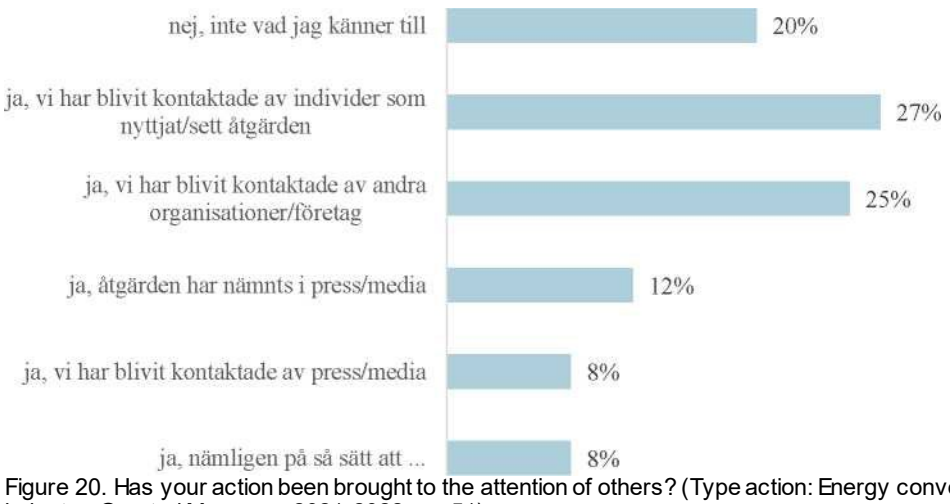


Figure 20. Has your action been brought to the attention of others? (Type action: Energy conversion, industry, Granted Measures 2021-2022, n = 51).

Among energy conversion providers, interviews show that a large part of the dissemination of information on energy conversion takes place on the basis of those selling the energy conversion hardware, such as pellet boilers. At the same time, it is also described that there is a flow of information about the technology between the buyers of the hardware. Climate Leap is likely to have contributed to learning effects on energy conversion technologies, but to varying degrees across different sectors.

Among food producers, information on Climate Leap is disseminated between businesses and from the Swedish Environmental Protection Agency. However, from the interviews, they did not feel that companies learn from each other's implementation of conversion.

In summary, the survey responses suggest that there is a significant dissemination of information on energy conversions carried out. At the same time, the interviews point to variations in both the extent of this dissemination, and to whom it takes place (e.g. mass media, or directly to other companies). This variation may provide an opportunity to design support actions to raise the overall level of information dissemination and thus contribute to technology diffusion for the climate transition.

Conclusions on energy conversion industry

The aid from Climate Leap is spread across different sectors and the types and size of the organisation under the type measure energy conversion in industry. There is therefore reason to believe that different markets have been affected differently. However, the analysis of the replies to the questionnaire for this type of measure did not raise concerns that the aid has distorted competition.

However, the replies to the questionnaire indicate that companies that have not applied for or awarded grants may be forced to leave the market or need to reduce the number of employees. This could then increase market concentration. However, the interviews did not indicate that these two effects had occurred to an extent that distorted competition.

Governance analyses in other areas have found a tendency for instruments to favour larger companies at the expense of smaller ones. This trend would be explained, inter alia, by the fact that larger companies have relatively more resources, benefit from economies of scale and, where they are already more efficient than small companies, benefit even more to gain market share. It cannot be ruled out that this is also the case within Climate Leap. However, there is no particular indication of the analysis.

At the same time, it is conceivable that the design of Climate Leap has a positive impact on competition in the sense that smaller undertakings are able to receive grants which represent a larger proportion of the total investment amount than larger undertakings. This is addressed by the group exemption regulation (EU State aid rules). The Climate Leap Regulation states that Member States need to comply with these rules.

The analysis focused in particular on the markets within four SNI codes. In markets where beneficiaries operate in food production (SNI code 10), market concentration is generally high: mainly at product level but in some cases also at geographical level. One example is certain dairy products, which are produced and sold in geographically defined areas of the country. In addition, specifically in the case of milk, competition from imported products is relatively low. However, the market analysis does not reveal specific indications that Climate Leap distorted competition in this sector.

In markets where beneficiaries operate in the construction industry and parts of the building materials industry, market concentration is high. The larger construction companies in construction are often vertically integrated into activities supported in the energy conversion industry. This concerns the manufacturing of other non-metallic mineral products (SNI code 2399) and the extraction of sand, gravel and mountains (SNI code 0812).

In some product markets in construction equipment manufacturing, market concentration is high but not significant in the product markets covered by the SNI code 2399, which was a major beneficiary of aid. In addition, the market for construction materials faces competition from foreign producers (excluding cement and concrete). The construction industry is characterised by procurement procedures, thus maintaining competition on the market for infrastructure projects. However, market concentration entails a risk of price cooperation, but should not be a reason why Climate Leap would distort competition. Support from Climate Leap has been given to both larger and smaller actors in different parts of Sweden. Smaller companies are eligible under the EU Block Exemption Regulation for a higher proportion of aid relatively larger, which should help to ensure that the latter are not rewarded at the expense of small operators. The amounts of aid from Climate Leap to measures in the field of energy conversion in industry are generally found at the lower end of the range of aid paid out.

The market for suppliers of energy conversion solutions (SNI code 35) is characterised by many large and smaller players. However, the aid went to three of these companies and to Scanbio (SNI code 1629) which we consider to be an operator on the same market. The interviews highlight different perspectives on the competitive situation in the sector, but the combined interpretation is that Climate Leap does not distort competition. As a result, there are no indications that Climate Leap caused significant distortions of competition on the market by suppliers of energy conversion solutions.

In addition, the interviews confirmed that larger actors tend to have more insight into whether energy conversion can deliver cost savings for their activities (regardless of the existence of Climate Leap).[26] On the other hand, due to the very existence of Climate Leap, smaller operators may have few incentives to carry out energy mapping (which would otherwise not have been done) and thus to be aware of alternative energy use that can bring potential cost savings (with or without aid). Other factors that could favour smaller operators and possibly also competition are that smaller operators are eligible for a relatively higher contribution rate relative to the cost of the investment, as well as, because large operators included in the EU ETS cannot receive support from Climate Leap, with the exception of the valorisation of waste heat. Factors such as these are likely to favour smaller operators in particular, which could increase competition (all other things being equal).

26 "the requirement to carry out an energy mapping exercise applies to all large companies, regardless of industry and size of energy use."

Answers to the evaluation questions

This chapter summarises answers to the European Commission's evaluation questions. Replies from previous evaluations have been supplemented by new evidence produced in this report. The answers given here are preliminary and will be reviewed in the context of the presentation of results from the SEL research project.

Direct effects of the aid on beneficiaries

Has Climate Leap provided climate investments that can permanently reduce greenhouse gas emissions?

Answer to question: *I. Has Climate Leap provided climate investments that can sustainably reduce greenhouse gas emissions?*

Yes, Climate Leap has provided climate investments that can permanently reduce greenhouse gas emissions. Investments have taken place in areas such as energy conversion, charging stations, waste facilities and biogas production. Some of these measures had been implemented even without Climate Leap. The survey carried out suggests that around 66 % of the measures granted were not implemented without Climate Leap. A further 25 % of the measures had been implemented according to the request, but to a lesser extent. The percentages relate to the number of actions. In some categories of measures there are a large number of measures, while others have few measures, but significant emission impacts.

Has the aid reduced greenhouse gas emissions?

Answer to question: *II. Has the aid cut greenhouse gas emissions?*

Yes, the aid has reduced greenhouse gas emissions. The measures implemented in the period 2020-2022 are estimated to reduce greenhouse gas emissions by a total of 33,6 million tonnes of CO 2-e over the lifetime of the measures. Based on survey replies for the period 2020-2022, 80 % of emissions reductions (26,9 million tonnes CO 2-e) are estimated to be additional, i.e. they would not have taken place without Climate Leap. Of these additional emission reductions, at least 19,9 million tonnes of CO 2-e are estimated to occur inside Sweden's territorial borders.

The calculation of additional emission reductions is based on survey responses from successful respondents, which means that the counterfactual outcome is based on assessments of what would have happened without Climate Leap. It would have been possible to estimate additional emission reductions based on rejected measures showing lower estimated additionality than those granted. Generally speaking, support has been given to measures with a high climate benefit and a lower degree

of profitability, which may mean that profitable measures have been implemented even though they have not received aid. If this is the case, it is also reasonable that additionality is lower for rejected applications. Comparing the outcome of estimated additionality between granted and rejected applications is therefore problematic.

At the end of 2023, the question of additional emission reductions can be answered on the basis of econometrically estimated counterfactual relationships. The Swedish Environmental Protection Agency finances an ongoing research project at the Swedish University of Agricultural Sciences (SLU) "Evaluation of Climate Leap: Current scientific evidence and future design." The project runs until December 2023 and aims to improve understanding of the impact of Climate Leap on stakeholders' investment decisions, energy use, greenhouse gas emissions and economic performance using actual outcome data.

Indirect effects

Has the support provided market replication and diffusion of technology?

Answer to question: *III. Has the aid provided market replication and diffusion of technology?*

Climate Leap has contributed to the market introduction and diffusion of technology. This concerns, for example, the impact of aid for the deployment of charging infrastructure and aid for liquefied biogas. Rechargeable vehicles were assessed as a new technology that had passed the prototype stage and the technology deployment of rechargeable vehicles could thus be expected as an effect of the deployment of charging infrastructure (WSP, 2017). WSP (2021) concluded that Climate Leap is likely to have contributed to some dynamic effects for liquid biogas and the analysis further indicated that there are effects on technology diffusion and exposure of implemented measures.

A prerequisite for technology diffusion is the dissemination of information on the climate investments made. In the survey, around 15 % indicate that the measure is mentioned in the press and the media and almost 40 % have been contacted by other companies and organisations.

Has the aid had an impact on other environmental quality objectives and health?

Answer to question: *IV. Has the aid delivered effects on other environmental quality objectives and health?*

Overall, Climate Leap is considered to have a positive impact on other environmental quality objectives and health.

The WSP (2017) examined the impact on other environmental quality objectives and health qualitatively. Positive effects were assessed on the environmental quality objectives 'Risk air', 'Only natural acidification', 'Protective ozone layer', 'No

eutrophication', 'Live forests' and 'Good built environment'. Positive health impacts were mainly associated with type measures that reduce emissions of local air pollutants. A potential negative impact on other environmental quality objectives was noted for measures involving fuel switching from fossil fuels to combustion of biofuels. This is due both to the fact that combustion emissions can be higher and because more transport is needed when biofuels replace fossil fuels.

WSP (2021) selected type measures with relatively large aid amounts for analysis and quantification of impacts on other environmental objectives. The calculations available showed the greatest impact on emission reductions of nitrogen oxides, volatile organic compounds and hydrocarbons. Furthermore, it was noted that measures related to energy conversion and district heating can have either positive or negative effects on environmental objectives, depending on the type of energy conversion carried out and on how electricity and fuels are produced and how energy is supplied. While switching to geothermal heating reduces most air pollutants regardless of the fossil fuel that is replaced, switching to biofuels can lead to increased levels of local air pollution and therefore negatively affect other environmental quality objectives. The possible increase in local air pollution depends not only on the type of fuel but also on the abatement technology used.

Has the aid had an impact on employment?

Answer to question: *v. As the aid had effects on employment?*

The replies to the survey suggest that around 20 % of the aid has resulted in new employment. New employment has taken place in all categories of measures and to a greater extent in the categories of waste, energy efficiency and biogas production than in other categories of measures.

Has the aid had an impact on competition in the markets in which the beneficiaries operate?

Answer to question: *we. Do the aid have an effect on competition in the markets on which the beneficiaries operate?*

Market analyses have been carried out for measures in energy conversion industry, biogas production, plastic recycling and conversion to biogas for heavy-duty vehicles. There are indications that Climate Leap can provide significant competitive advantages for beneficiaries and that the application process is complicated for small operators, but neither previous market analyses nor those carried out under this mandate have been able to demonstrate distortions of competition. The extent of the competitive advantages for the beneficiaries and the risk of distortion are associated with the market in which the beneficiaries operate, making it difficult to generalise the results of the market analyses carried out to the whole Climate Leap.

The market analyses in previous evaluations can be summarised as showing no clear impact on competitiveness, barriers to entry or that less efficient firms may remain in the market due to the aid.

On the other hand, there may be obstacles for small operators to apply, as they

require some knowledge, resources but also motivation to submit an application.

This evaluation presents a market analysis for energy conversion measures in industry. It focused on markets within four SNI codes which received a large proportion of aid.

In markets where beneficiaries operate in food production (SNI code 10), market concentration is generally high, increasing the risk of negative effects on competition. However, the market analysis does not reveal any particular evidence that Climate Leap distorted competition. The market for sand, gravel and rock crushed (SNI code 0812) and other non-metallic mineral construction materials (SNI code 2399) are covered by small and large operators. The major players are often vertically integrated into the construction industry (construction), which is an industry with high market concentration. Procurement procedures maintain competition in construction. However, market concentration carries the risk of price cooperation and vertical integration implies low price transparency, but should not be a reason why Climate Leap would distort competition. The market for suppliers of energy conversion solutions (SNI codes 35 and 1629) is characterised by many large and smaller players. The interviews highlight different perspectives on the competitive situation in the sector, but the combined interpretation is that Climate Leap does not distort competition. As a result, there are no indications that Climate Leap has caused significant distortions of competition in the market for suppliers of energy conversion solutions.

In addition, the interviews confirmed that larger actors tend to have more insight into whether energy conversion can save costs (regardless of the existence of Climate Leap). On the other hand, small operators can be incentivised through Climate Leap to carry out energy mapping and in many cases carry out energy conversion (with or without aid). Other factors that could favour smaller operators and possibly also competition are the fact that smaller companies are eligible under the EU Block Exemption Regulation for a larger proportion of aid, which should contribute to ensuring that the latter are not rewarded at the expense of small operators and, by preventing large players included in the EU ETS from receiving aid from Climate Leap[27]. Factors such as these are likely to favour smaller operators in particular, which could increase competition (all other things being equal).

Proportionality and appropriateness of the aid

Was the aid given to projects that deliver the biggest reduction in greenhouse gas emissions per krona invested?

Answer to question: *VII. WAS the aid given to projects that deliver the biggest reduction in greenhouse gas emissions per krona invested?*

Analysis of Klivit data is used to answer the question whether support has been given to the projects with the highest reduction in emissions per krona invested (CCR). The most recent data available in Klivit are used for the calculation. This

27 An exception is made for the recovery of waste heat.

means that the investment cost and emission reduction may have been adjusted if the data in the final report deviate from those in the application. Calculations of the CCR have been made by dividing emission reductions over the lifetime of the measure by the amount of investment. Evidence is available for both granted and rejected measures. However, initial calculations showed a large variation in the CCR for rejected applications and in some cases a very high CCR. There are also refusals on the grounds of 'no significant permanent reduction per investment crown', which has a significantly higher ratio than the around 0,75 which is usually the cut-off point in the processing of applications. The explanation is that once the Environmental Protection Agency found the emission reductions unreasonable, they do not always correct the emission reductions in Klivit for applications that are rejected. This means that the emission reductions in rejected measures do not give an accurate picture of the climate benefit ratio. After discussion with the Swedish Environmental Protection Agency, the climate benefit quota for approved applications is used to give a preliminary answer to the question.

The figure below shows the climate benefit ratio of granted measures. The vertical axis has been delimited at a CCR equal to 5, meaning that approximately 50 applications with higher CCR are not visible in the figure. This is to better illustrate the distribution of the CCR for other measures.

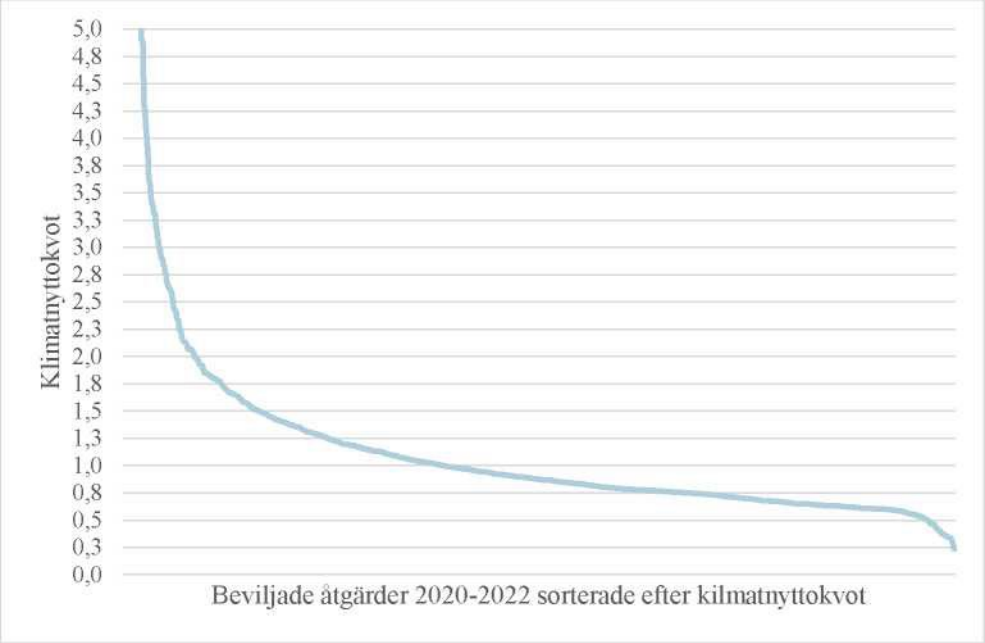


Figure 21. Climate benefit ratio (CO2-e emission reduction over the lifetime of the action divided by investment cost) for measures granted in 2020-2022, the vertical axis has been limited to the CCR = 5. Source: own processing of the measures granted in Klivit.

A total of 2 138 measures have been granted over the period. Of the measures, 699 (around 32 %) have a CCR lower than in 0,75. Many of these have a climate benefit ratio in the range between 0,6 and 0,749 (507 out of 699 is about 72 %). In order to give an overview of the measures that have a low CCR, the figure below shows the correlation between aid amounts and a CCR up to 1,0.

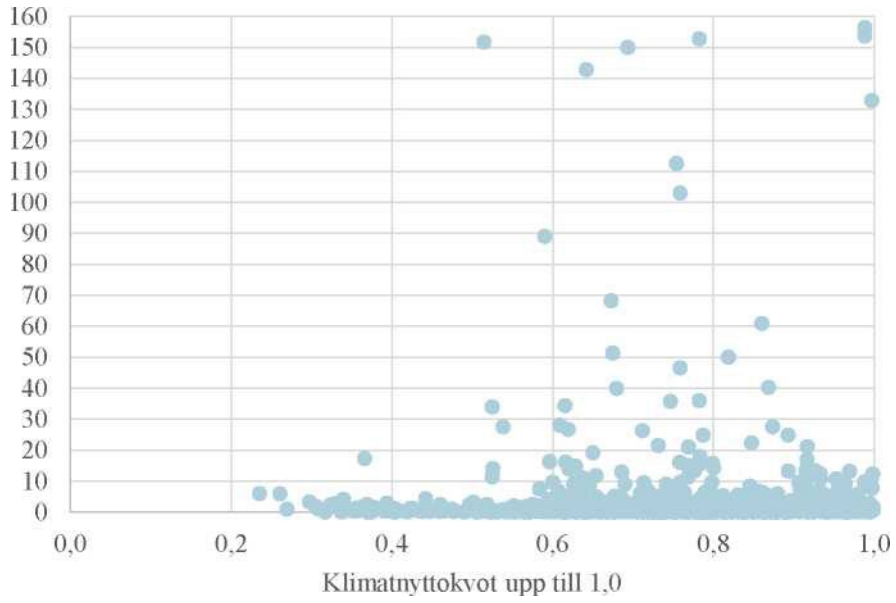


Figure 22. Liaison diagram between the climate benefit ratio up to 1,0 and the aid amount in SEK million for measures granted in 2020-2022. Source: own processing of the measures granted in Klivit.

The figure shows that there is no correlation between low CCR and large amounts of aid. There are a few one-off measures with large amounts of aid, which also have a low climate benefit ratio. It can be noted that only aid with a lower ratio than in 0,5 has received more than EUR 10 million in aid[28]. The average aid amount for measures with a lower ratio than in 0,5 is SEK 1,6 million, which can be compared to the average aid amount for all approved applications which is approximately SEK 4,2 million. Aid paid for measures with a ratio lower than in 0,5 amounts to approximately SEK 110 million, which represents approximately 1 % of the total amount of aid granted in the period 2020-2022.

The preliminary answer to the question is that the aid was to a large extent granted for measures that deliver the highest reduction in emissions per krona invested. While there are cases where aid was granted for measures with a low CCR, the aid is relatively small and no link has been identified between large amounts of aid and low CCR.

Has Climate Leap provided the necessary support, at the level of aid required, for the implementation of the investment?

Answer to question: *VIII. Has Climate Leap provided the necessary support, at the required level of support, for the implementation of the measure?*

In order to determine whether Climate Leap has provided support at a statutory level for the measures to be implemented, a question was asked about what would have happened to the measure had they received a small amount of aid. Each respondent received information on how much aid they received out of the total cost of measures and was asked to assess what it would have meant if they had received 10 percentage points of less aid instead (see example below).

Your organisation received 50 % funding of the total cost of the action.

What would have been if your organisation received only 40 % funding of the total the cost of the measure?

Table 23 shows that 36 % of respondents indicate that the measures had been implemented to the same extent as in the application despite the lower percentage of aid. This suggests that there is scope for reducing the aid rate. At the same time, it should be noted that the aid was at the level required by 19 % of respondents, as they state that they would not have implemented the measure at all if the grant component was reduced by 10 percentage points. The results in the table are relatively well in line with previous evaluations.

[28] The Environmental Protection Agency does not grant aid to applications with a lower quota than 0,5. The reason why the climate benefit ratio is lower than 0,5 may be that the investment cost has been higher or that the emission reduction has been revised downwards in the final report, compared to the data in the application.

Table 23. What would it have been if your organisation had only received a 10 percentage point lower share of funding of the total cost of the action? The measure was... (measures granted in 2021-2022).

Response options	By number	Share
... not implemented at all	125	19 %
... to a lesser extent than in the application	293	45 %
... carried out to the same extent as in the application	232	36 %
Total	650	100 %

The answer to the question is that the aid has been at the level necessary for implementation for almost 20 % of the measures. Around 45 % consider that a lower level of aid would have resulted in implementation to a lesser extent than in the application. The remaining 36 % indicate that they would have carried out the investment despite a lower share of aid.

Has Climate Leap been effective in speeding up the pace of achieving the environmental quality objective 'Limited climate impact'?

Answer to question: *IX. Has Climate Leap been effective in recording up the pace of achieving the environmental quality objective 'Limited climate impact'?*

Yes, Climate Leap has been effective in accelerating the pace of reaching the environmental quality objective 'Limited climate impact'. On the one hand, a relatively high proportion (66 %) of the measures granted had not been implemented at all but Climate Leap according to the survey, meaning that it would take longer to implement the emission reductions. On the other hand, Climate Leap has frontloaded some of the climate investments that would have been carried out even without aid. The survey shows that 63 % of the measures implemented to some extent without support from Climate Leap had been postponed. Most respondents believe that it had been delayed by 1-2 years.

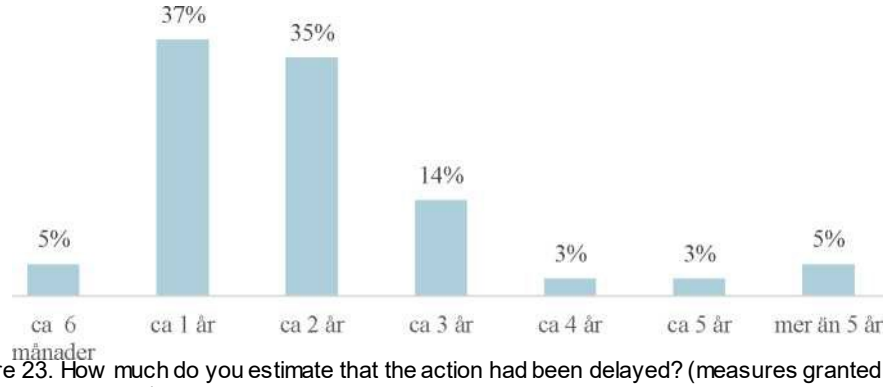


Figure 23. How much do you estimate that the action had been delayed? (measures granted in 2020-2022, n = 194).

References

Anthesis. (2022). *Evaluation Climate Leap – 2019-2020.* Stockholm: Anthesis.

European Commission. (2020). *State aid SA.49001 (2020/EV) – Sweden – Evaluation Plan for the aid scheme "Climate Leap".* Brussels: COMP Operations, C (2020) 4268 final.

HM Treasury. (2007). *Guidance on how to assess the competition effects of subsidies.* Taken from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachmenti ata/file/191490/Green_Book_supplementy_guidance_assessing_compeition_effects_subsidies.pdf

The Competition Authority. (2018). *Better competition in housing construction: Follow-up of developments in 2015-2018 and identification of continued investigative needs.* Swedish Competition Authority, Report 2018: 7.

The Swedish Environmental Protection Agency. (18 April 2023). *Overall results of Climate Leap*. Taken from the Environmental Protection Agency. https://www.naturvardsverket.se/amnesomraden/klimatomstallningen/klimatklivet/result-for-climate klivet/

The Swedish Environmental Protection Agency. (2023). *Overall report for allocation 1: 16 climate investments in accordance with the mandate in the Swedish Environmental Protection Agency's memorandum of appropriations.*

The National Environmental Protection Agency. (2013). *Climate investment programmes: Klimp 2003-2012, Final report.*

National Audit Office. (2019). *Climate Leap – Support for Local Climate Investment, Report 2019: 1.*

Rogers, E. M. (2003). *Diffussion of innovations, 5th edition.* New York: Free Press.

Struben, J., Sterman, J. D. (2008). Transition challenges for alternative fuel vehicle and transport systems. *Environment and Planning B: Planning and Design*, 35: 1070-1097.

WSP. (2017). *Climate Leap – An evaluation of the effects of the policy.* Stockholm.

WSP. (2021). *Impact of climate life – Evaluation in 2020.* Stockholm: WSP.

Annex 1. Survey replies

Data collection

The evidence was collected via an online questionnaire for two weeks in May 2023. The survey was designed in accordance with survey design in previous evaluations of Climate Leap (WSP, 2021) and (Anthesis, 2022). The questionnaire was sent by email to the contact persons for applications to Climate Leap, with a demarcation that each contact person would receive a maximum of three questionnaires. This takes into account the time and administrative burden for the respondent. The respective emails sent out clearly set out the measure to which the respondent was expected to respond together with the serial number of that measure. As in previous evaluations, questionnaires were sent to contact persons for both rejected and

successful applications. Reminders for the survey were sent out in two rounds at approximately one week intervals. For the approved applications, both ongoing and final reported actions were in place. The reason for sending questionnaires for rejected applications was to later use this group as a control group for the evaluation of additionality.

In total, around 3 300 applications were decided in 2021-2022. In cases where several applications had the same contact person, a maximum of three (selected for annual distribution and accepted/rejected) questionnaires were sent to the contact person. Around 1 000 applications were excluded on this basis. The questionnaire was then sent to contact persons for a total of 2 329 applications. Of these 'stuffed' 89 surveys, that is to say, they did not go to the recipient. The survey was answered by 1 205 people, which means that the response rate is 54 %. The table below shows the response rates for rejected and granted measures.

Table 24. Number of mailings, replies and response rates for applications approved and rejected (2021-2022).

Type of applications	Number of mailings	Number of replies	Response rate
Approved	1 004	675	67 %
Rejected	1 236	530	43 %
Total	2 240	1 205	54 %

Non-response analysis

Table 25 shows how mailings and responses received are broken down by category of measure and applications accepted and rejected.

Successful applicants are over-represented with 67 % response rate compared to 43 % for rejected applications. This is an expected outcome as a refusal is likely to make the respondent less willing to respond to the survey. It may also be more difficult to remember the scope of the refused application

, in particular if the person has been the contact person for more than one application. The action category "Waste" has relatively high response rates for both granted and rejected applications.

Table 25. Response rate by category of measure broken down by approved and rejected applications.

Action category	Response rate Approved ACP applications	Response rate legal requests
Waste	70 %	62 %
Energy efficiency improvements	64 %	41 %
Energy conversion	65 %	41 %
Vehicle	61 %	37 %
Gas emissions	90 %	47 %
Infrastructure	64 %	38 %
Charging station	69 %	47 %
Production of biogas	72 %	42 %
Transport	71 %	50 %
Other matters	71 %	39 %
Total	67 %	43 %

Table 26 shows the number of mailings, the number of responses and the response rate per type action. The type measures that stand out with a particularly low response rate have too few observations to be able to draw firm conclusions about the group.

Table 26. Replies to questionnaires by type measure and response rate.

Type action	Mailing	Repl y	Response rate
Biogas production plant	92	57	62 %
Installation for the production of other biofuels	4	3	75 %
Waste facilities for increased recycling and more	49	27	55 %
Biochar, manufacturing	25	17	68 %
Cycle, other	14	4	29 %
Cycle route management	4	3	75 %
Energy efficiency improvements	227	102	45 %
Energy conversion, real estate/building	347	200	58 %
Energy conversion, industry	150	82	55 %
Energy conversion, agriculture	346	153	44 %
Energy conversion, waste heat	23	9	39 %
Energy conversion, transport	38	21	55 %
District heating	34	19	56 %
Gas, destruction	7	4	57 %
Gas, procurement	5	4	80 %
Non – Publish fast charging: normal charging	1	1	100 %
Non-public standard charging	37	13	35 %
Non-audience fast charging	66	45	68 %
Infrastructure	18	5	28 %
Purchase of electric cars	7	1	14 %
Purchase of heavy-duty vehicles	107	57	53 %
Charging infrastructure	1	1	100 %
Charging station, ship	7	1	14 %
Charging station, air	1		0 %
Transhipment terminal	8	4	50 %
Hydrogen production	18	13	72 %
Audience standard charging	263	166	63 %
Audience fast charging	166	99	60 %
Audience fast charging: normal charging	38	17	45 %
Biogas refuelling station	30	18	60 %
Hydrogen refuelling station	13	9	69 %
Fuelling station, other biofuels	7	3	43 %
Other matters	87	47	54 %
Total	2240	1205	54 %

Table 27 shows the response rate per organisation type. The organisation type that deviates most from the average response rate is the Foundation.

Table 27. Response rate per organisation type.

Organisation Type	Mailing	Reply	Response rate
Apartment association	31	15	48 %
Companies	1836	983	54 %
Non-profit association	50	26	52 %
Municipality or association of municipalities	77	41	53 %
Municipal Companies	158	93	59 %
County councils or regional associations	12	7	58 %
Foundation	16	6	38 %
Other	60	34	57 %
Total	2240	1205	54 %

Table 28 analyses the losses broken down by investment cost. The results show that there are no significant differences in response rates between different investment costs.

Table 28. Response rate according to the size of the investment cost.

Investment cost (SEK)	Mailing	Reply	Response rate
I. 100 000	71	36	51 %
100 000 – 250 000	233	128	55 %
250 001 – 500 000	307	157	51 %
500 001 – 1 000 000	415	219	53 %
1 000 001 – 5 000 000	704	368	52 %
> 5 000 000	510	297	58 %
Total	2240	1205	54 %

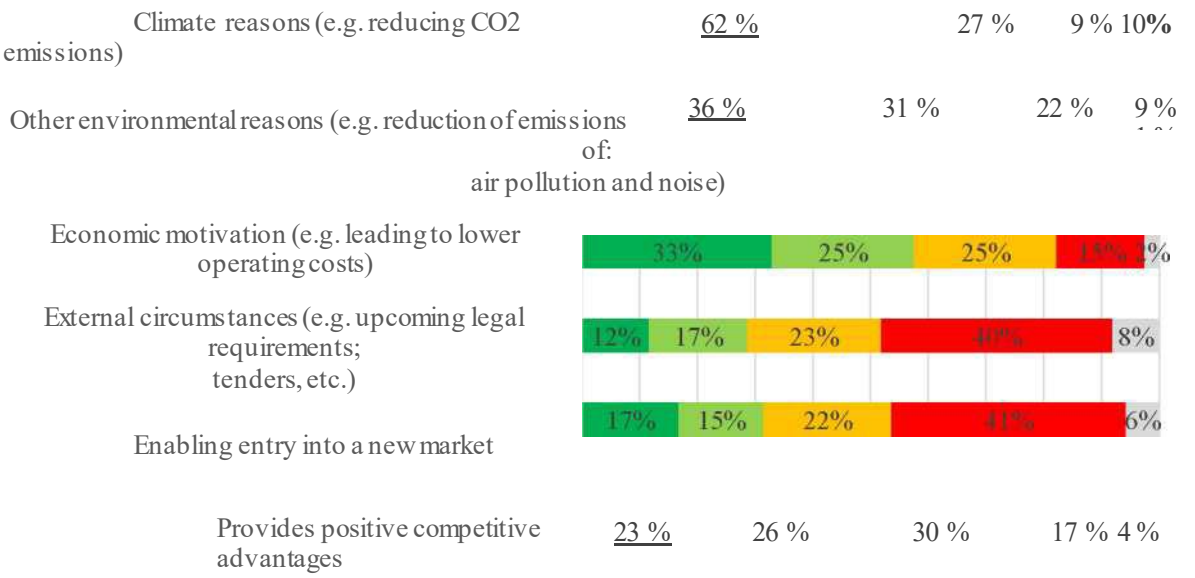
Generalisability

A response rate between 50 % and 75 %is common for surveys (Riksrevisionen, 2019), which means that the response rate in this survey (54 %) can be considered as normal. The main deviation is that successful applicants are over-represented with 67 % response rate compared to 43 % for rejected applications.

Survey replies

A summary of the survey responses collected is presented below. First, the results are presented in graphs and then in tables. 29

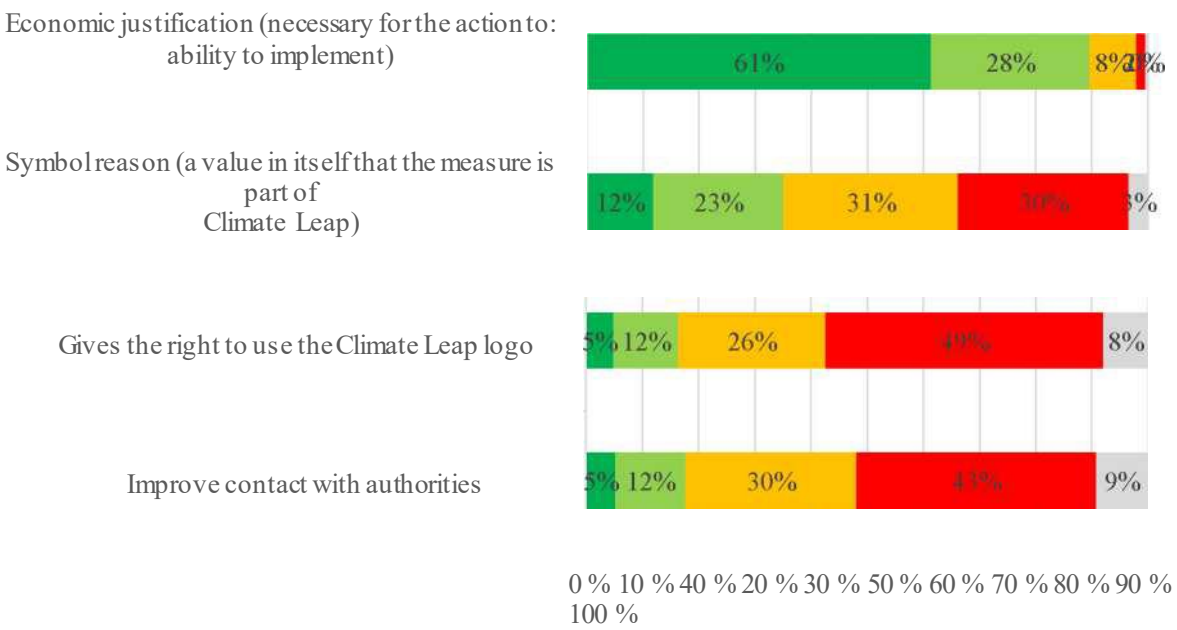
Question 3 To what extent is it true that the following were a motive why your organisation wanted to implement the action you were looking for contribution for through Climate Leap?



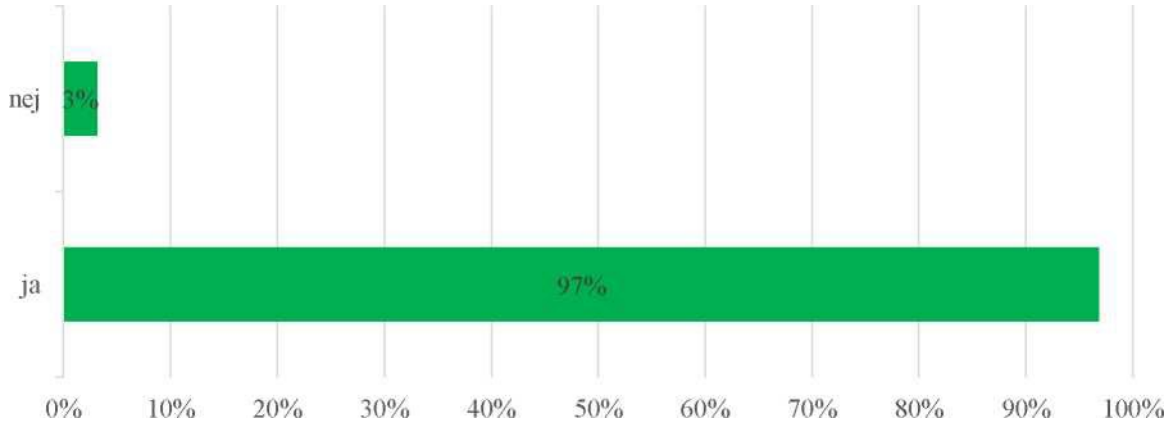
That is perfectly true, and to a high degree of probability, the degree of accuracy is somewhat incorrect, and is not known at all.

The29 reason why the numbering of the questions starts with 3 is that the survey programme numbered the pages with introductory text with 1 and 2. The numbering has been maintained in order to make it easier to link to raw data.

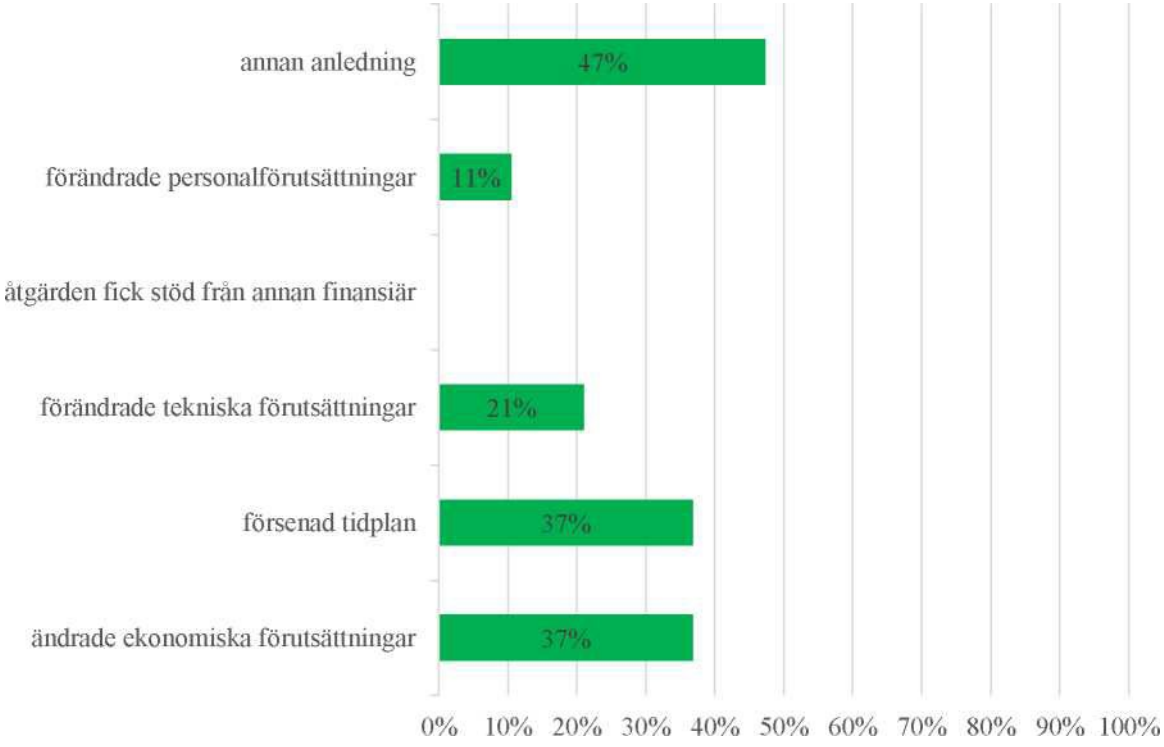
Question 4 to what extent is it true that the following was a motive why did your organisation choose to apply for Climate Leap funding?



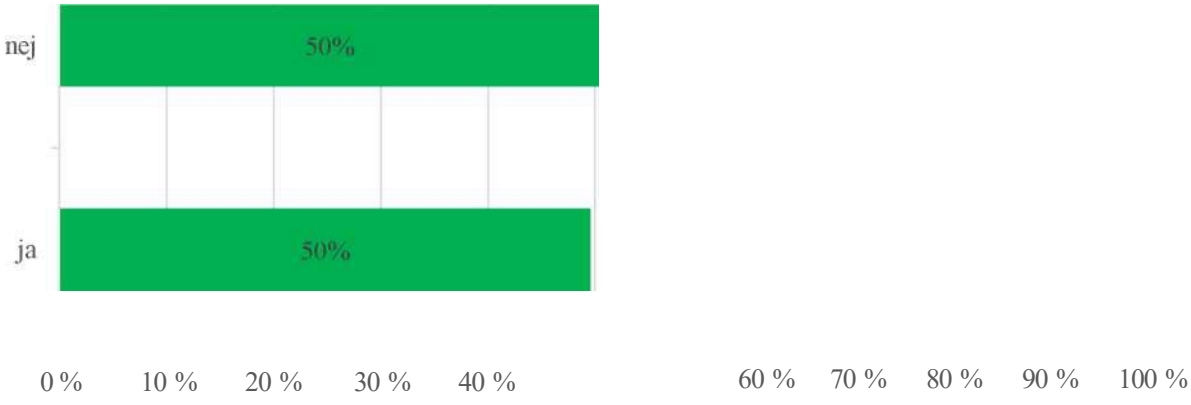
Question 5 Have your organisation chosen to implement the action you received funding for?



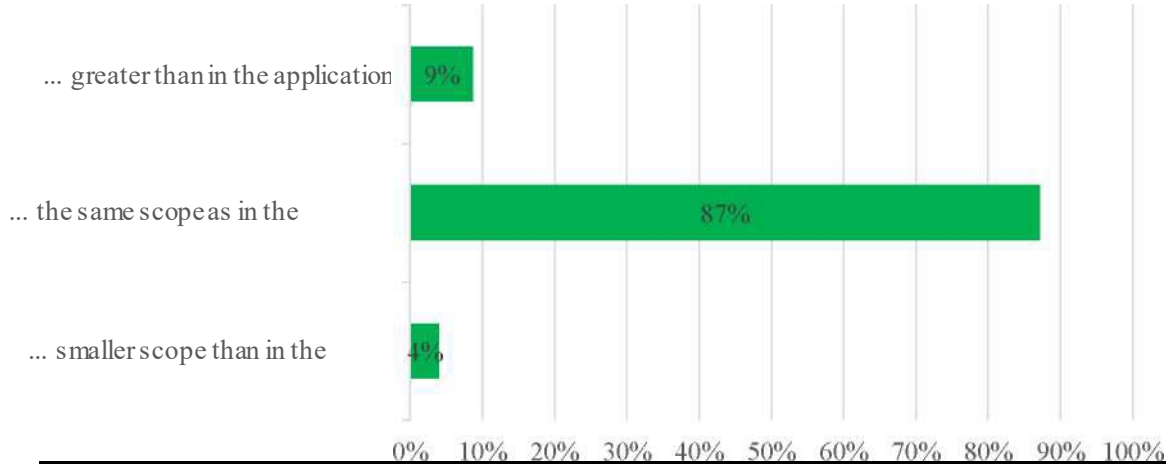
Question 6 What was/were the reason why you chose not to implement the project will be reimbursed...



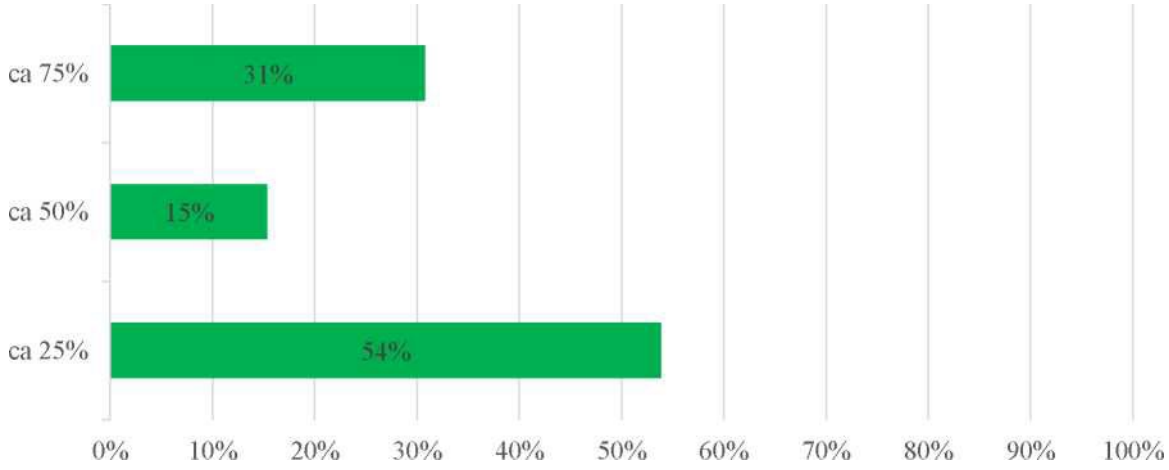
Question 7 Has the measure you received funding been finally reported?



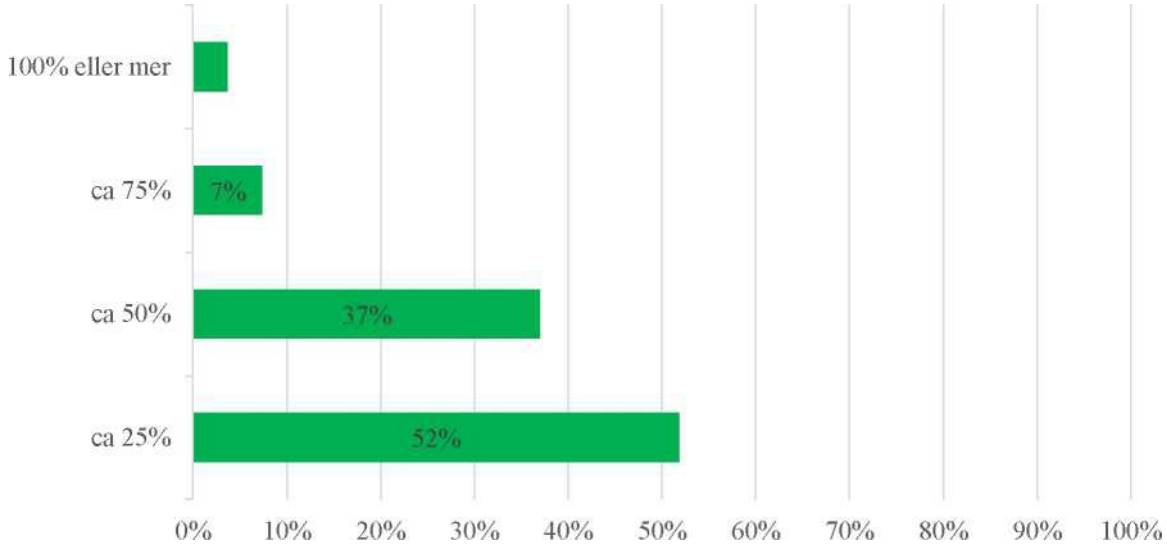
Question 8. The scope of the final reported action compared to the application?
The measure was carried out in...



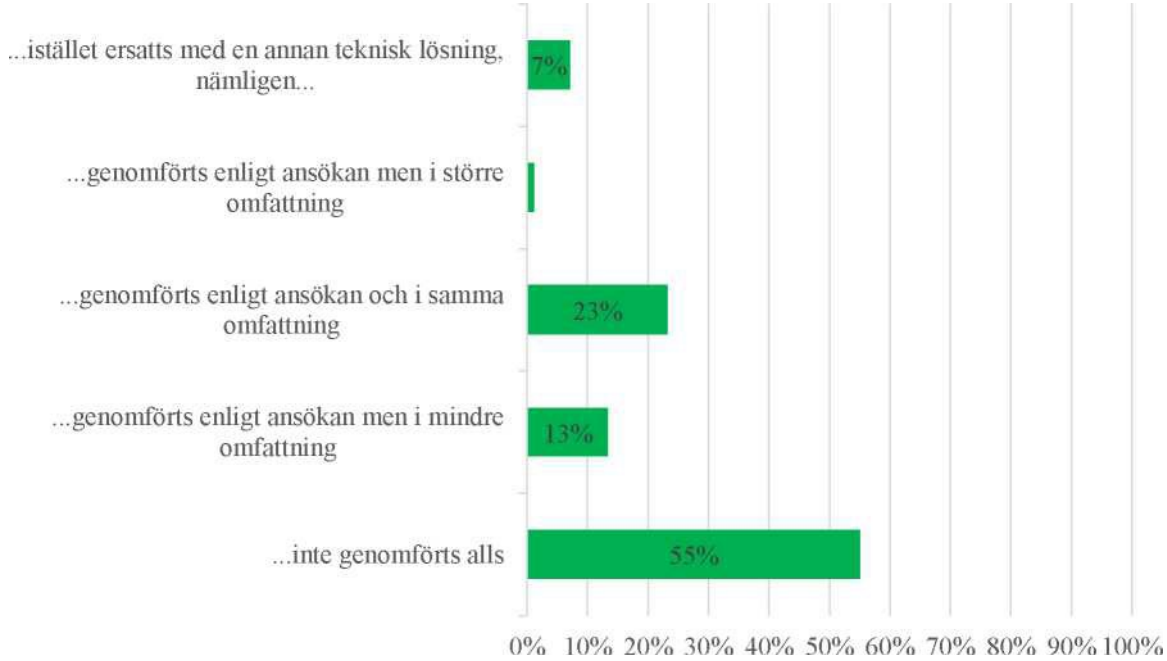
Question 9 How much less was the scope of the implemented the measure compared to what was described in the application. Action reduced by:.....



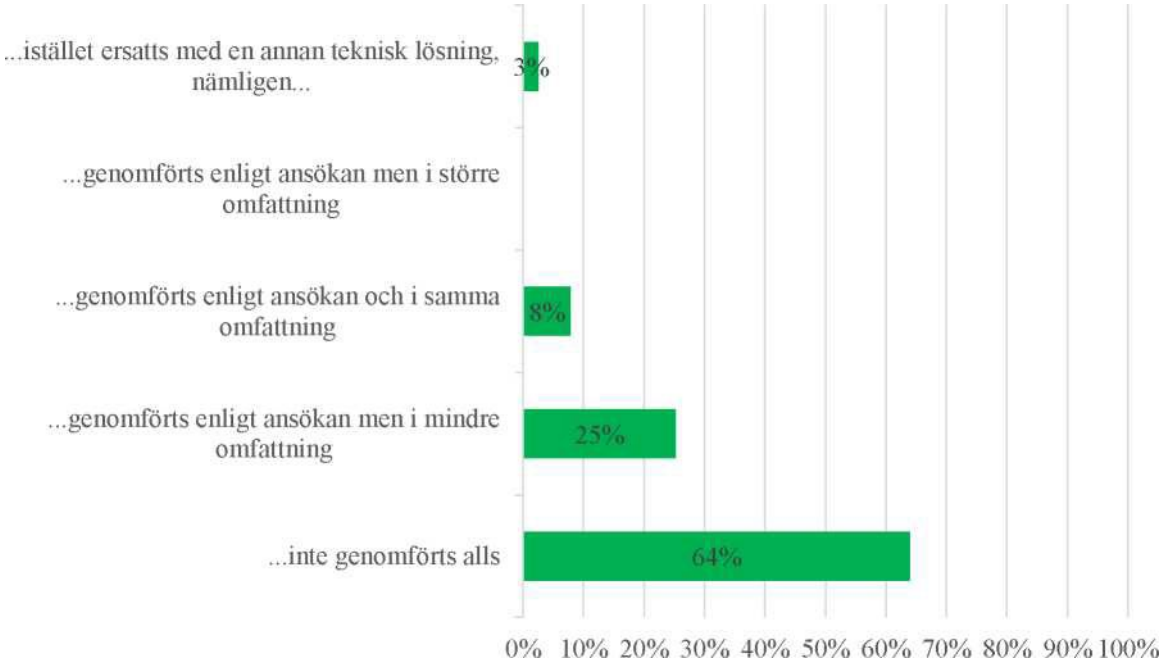
Question 10 How much larger the scope of the implemented the measure compared to what was described in the application? Action was extended by:.....



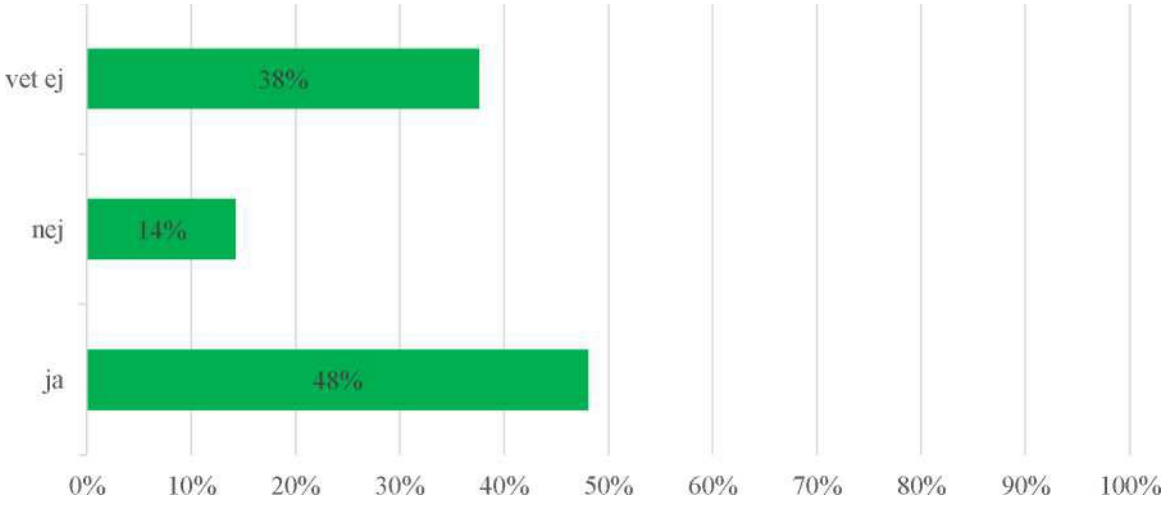
Question 11 What meant that the measure was NOT funded via Climate Leap? The measure has...



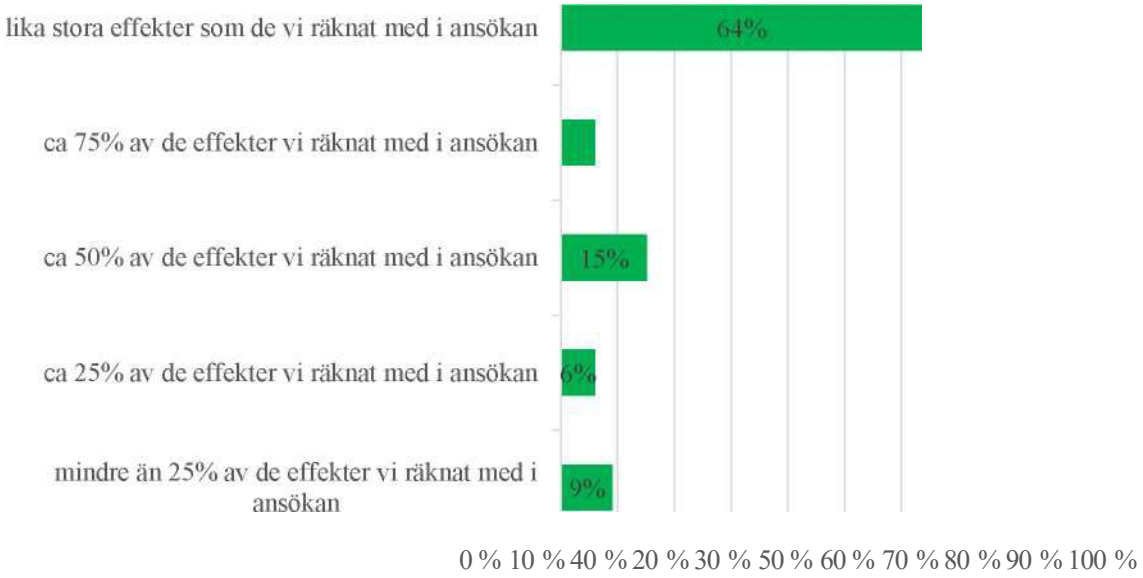
Question 12 What do you think would have meant if the measure had NOT received funding from Climate Leap? The measure was...



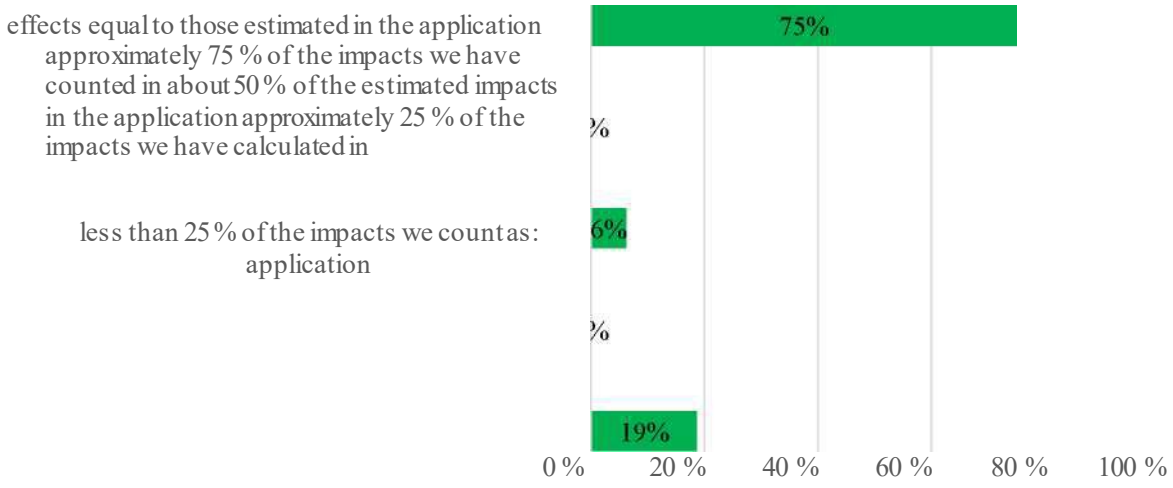
Question 13 Have you plan to implement the measure/similar measures later in the past?



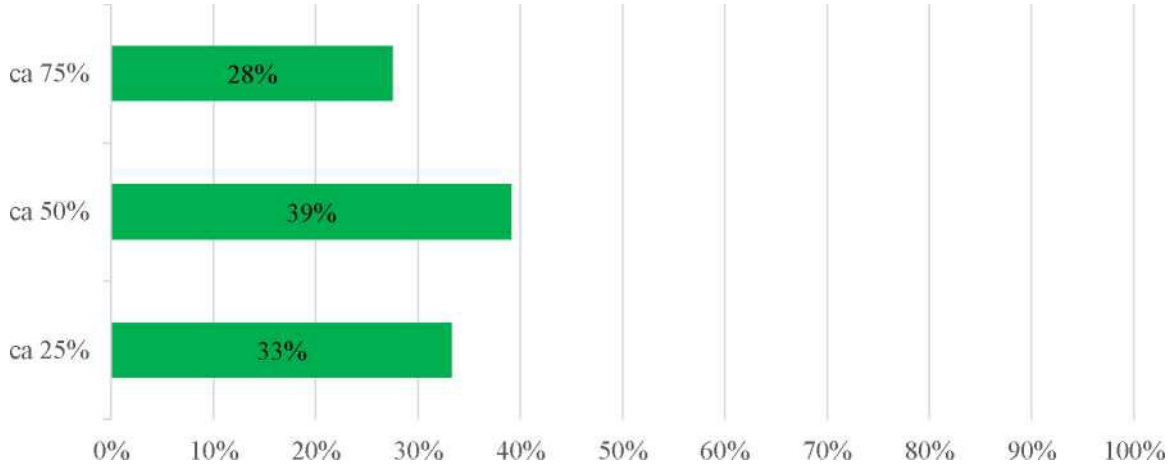
Question 14 How large impacts in terms of reducing climate gas emissions (compared to the application), you consider that the alternative solution has: given?



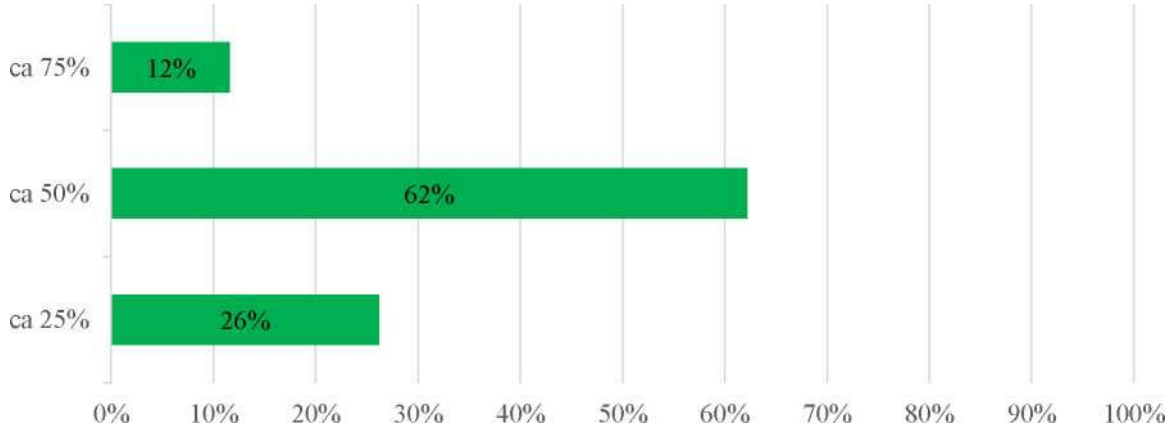
Question 15 How large impacts in terms of reducing climate gas emissions (compared to the application), you consider that the alternative solution has: given?



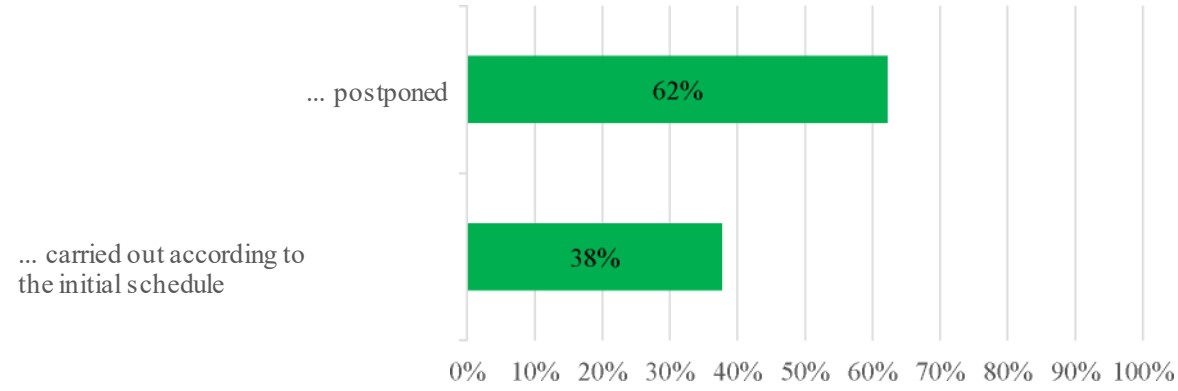
Question 16 How much smaller (compared to how it is described in the application) was the implementation of the measure? The measure had: implemented by...



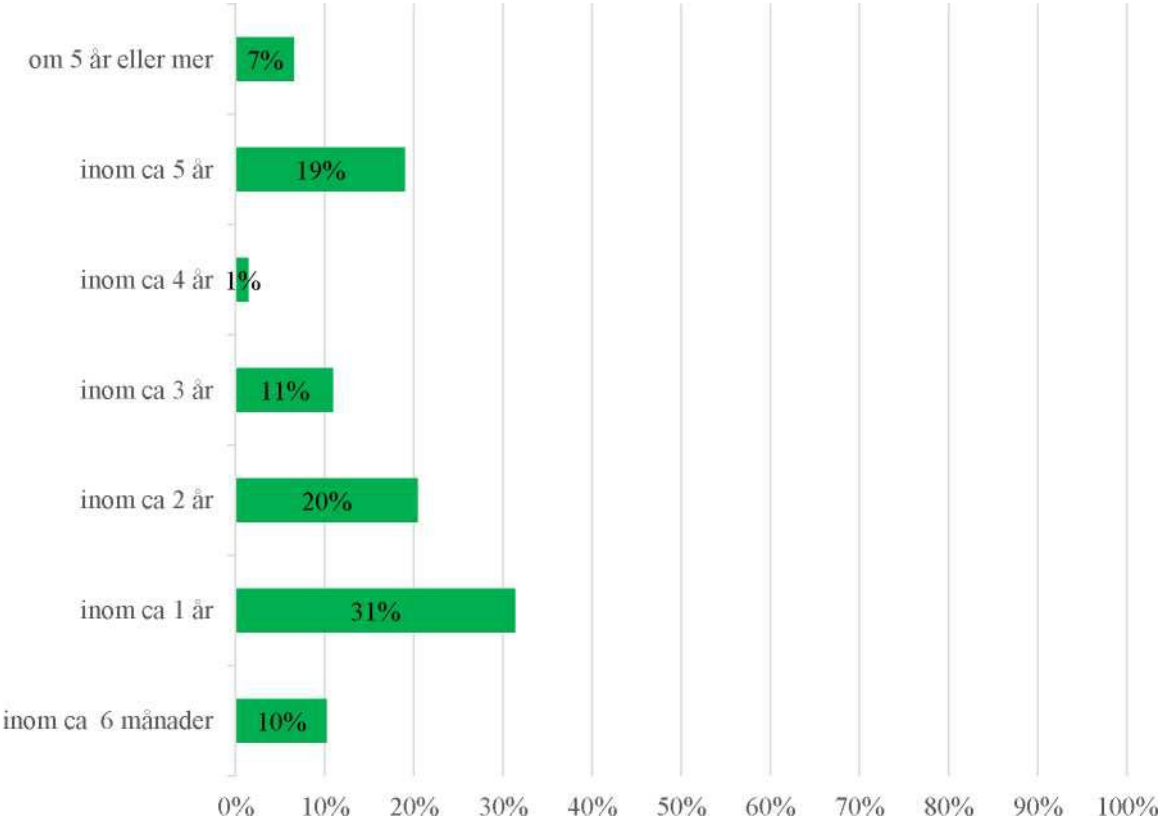
Question 17 How much smaller (compared to how it is described in application) do you think that the implementation of the action HDE has been if you:
organisation did not receive funding from Climate Leap? The measure had: implemented to .....



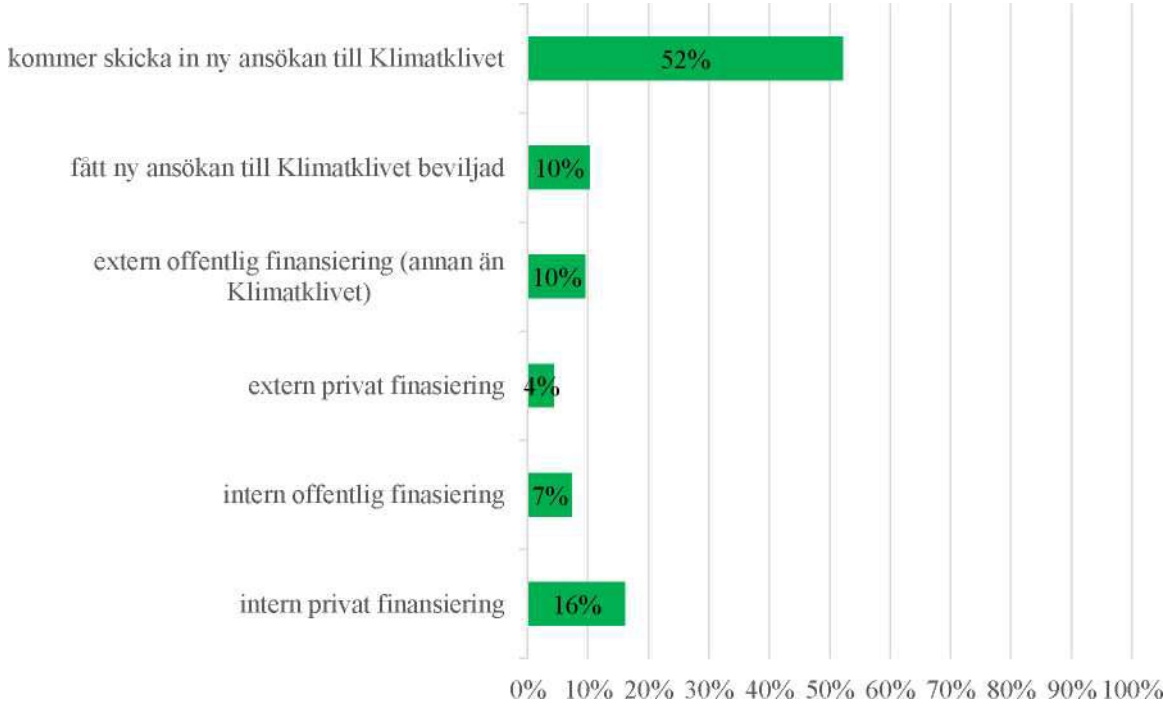
Question 18 What had this meant for the measure's nbsp; timetable if you organisation NOT received funding viia Climate Leap? Action had...



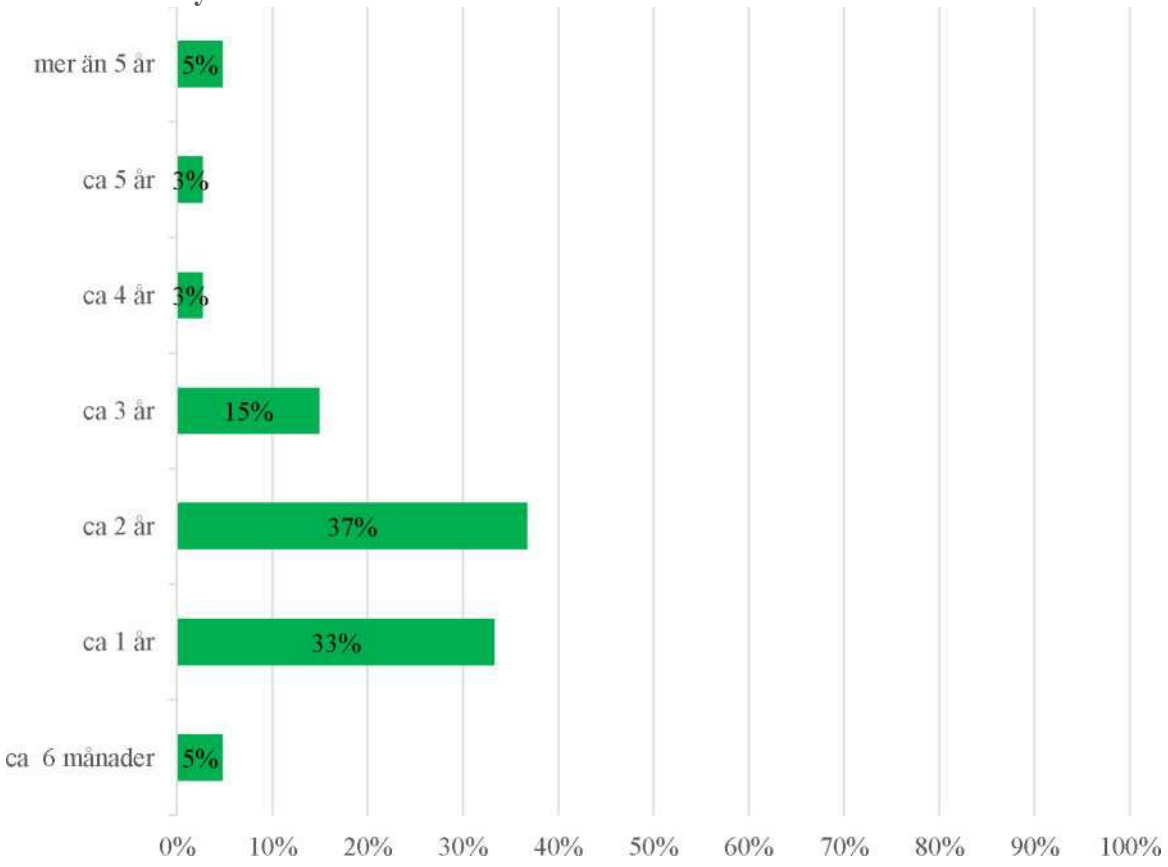
Question 19 When you estimate that the measure/similar measure will: to be implemented?



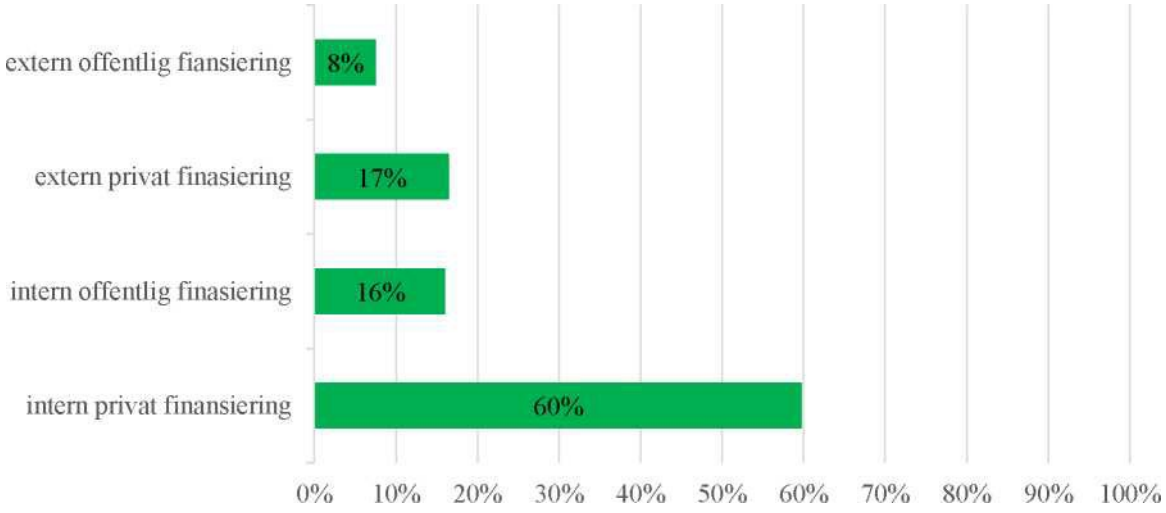
Question 20 How will you mainly finance the measure (s) similar to the measure? The part of the action which had been financed by:
Climate Leap will instead be mainly financed by...



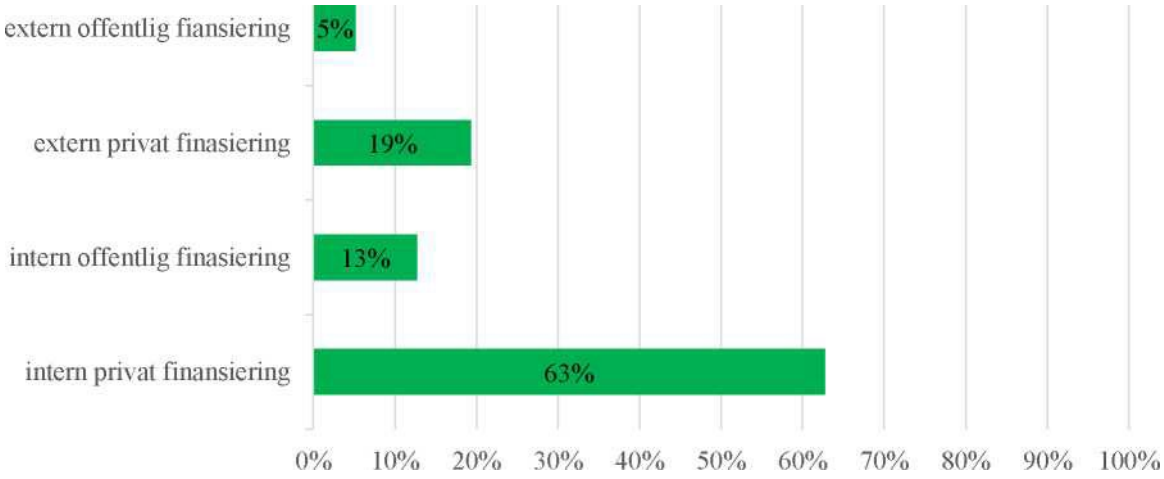
Question 21 How much do you estimate that the measure had been delayed?



Question 22 How has the measure been financed mainly when you do not: received funding from Climate Leap? The part of the measure that would: instead, funding from Climate Leap has been mainly funded by...

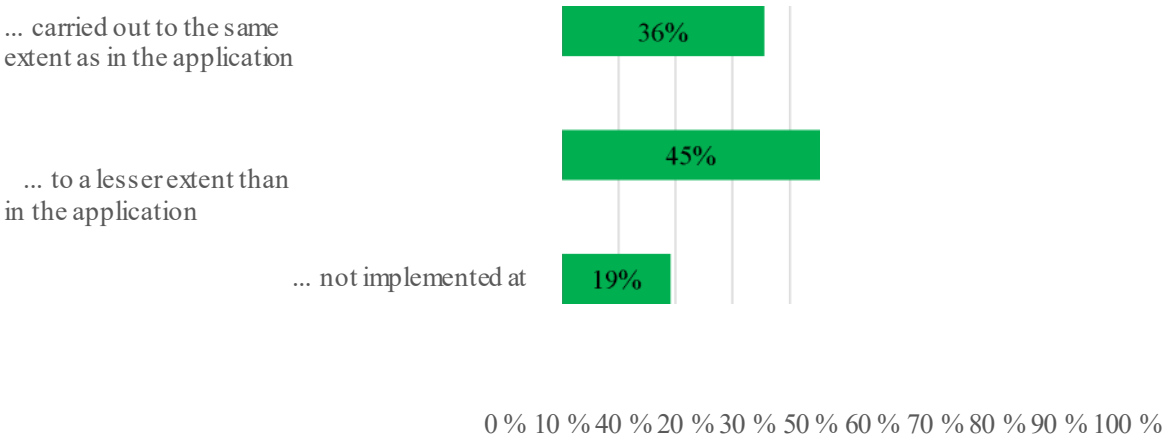

extern offentlig fiansiering
8%
extern privat finasiering
17%
intern offentlig finasiering
16%
intern privat finansiering
60%
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%

Question 23 How would the measure mainly be financed if you did not: received funding from Climate Leap? The part of the measure which: instead, funding from Climate Leap had been mainly financed by...

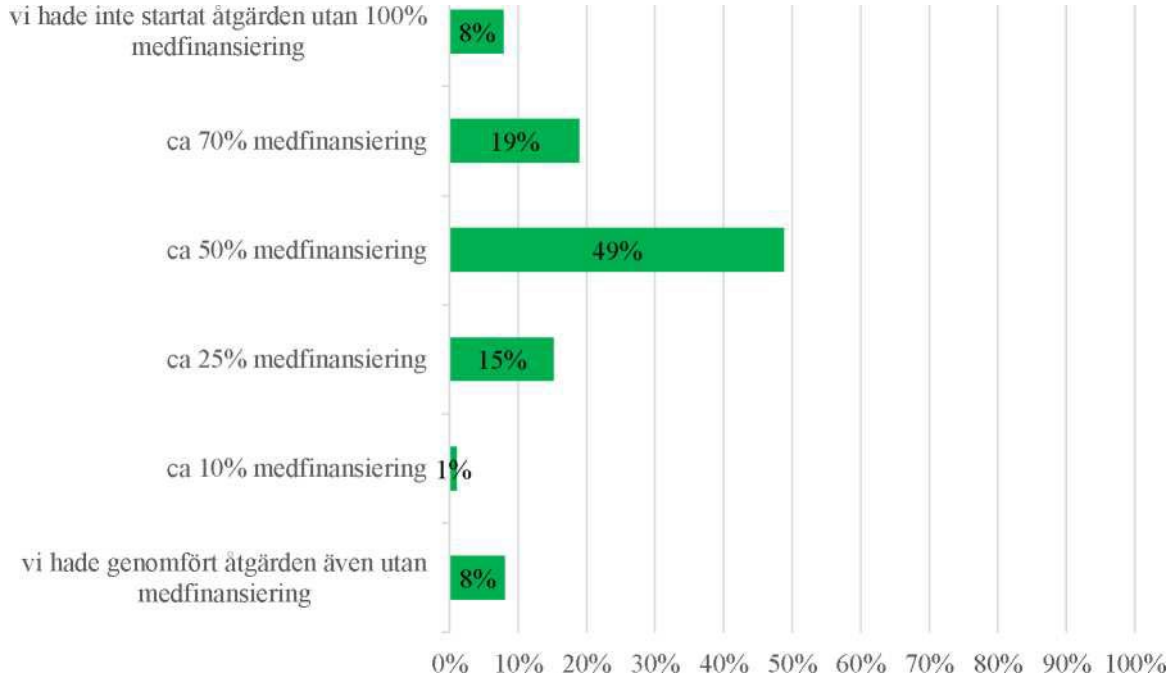


Question 24 What would have been if your organisation had received only XX% (*XX% = 10 percentage points lower than the granted*) funding of the total cost of the measure? The measure was...

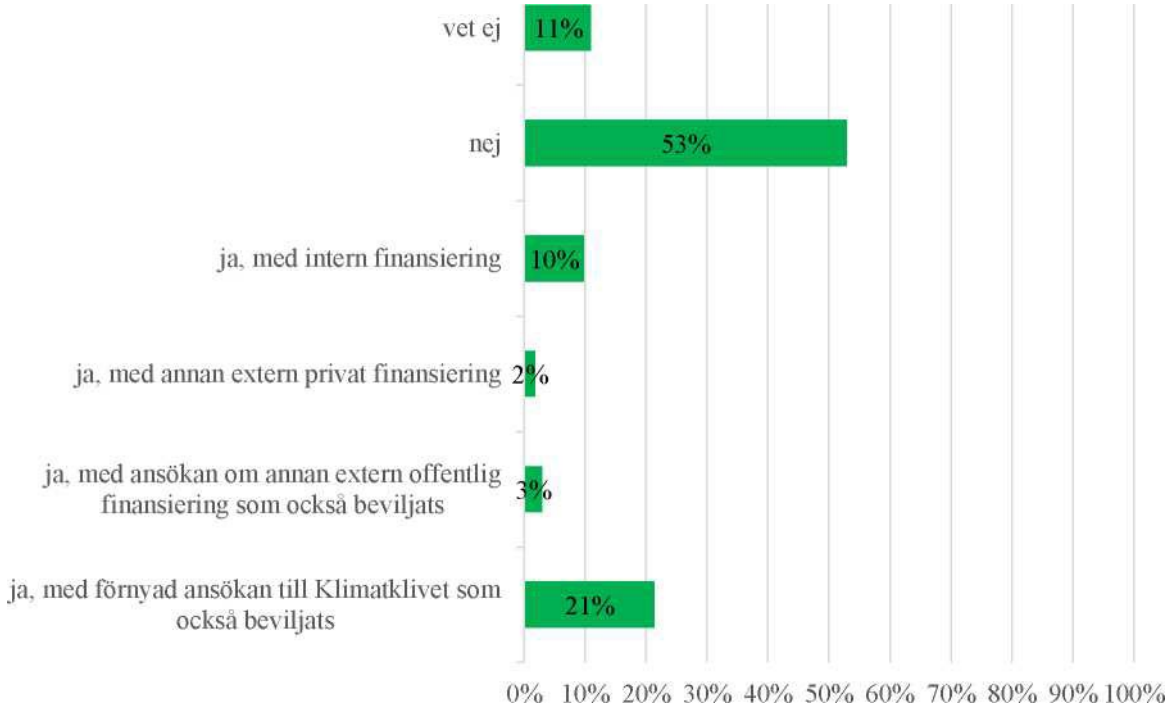
... has been implemented more than in the application 0 %



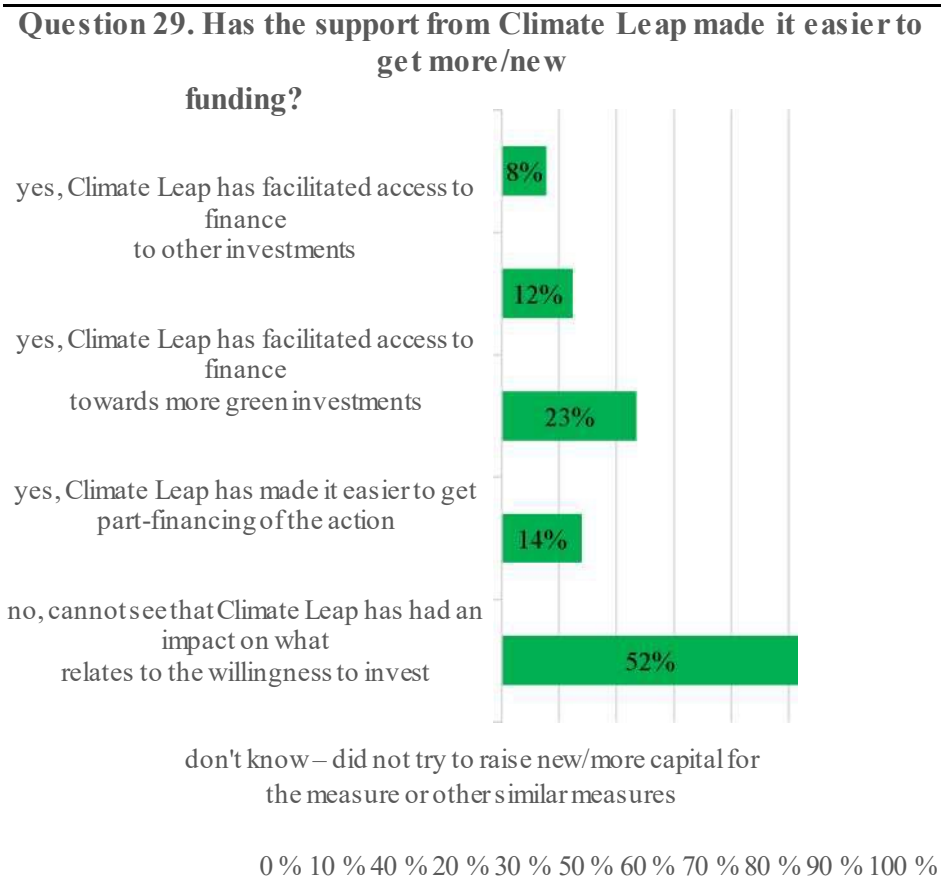
Question 25 How large is the minimum level of co-financing from Climate Leap required for you to implement on a full scale the measure?



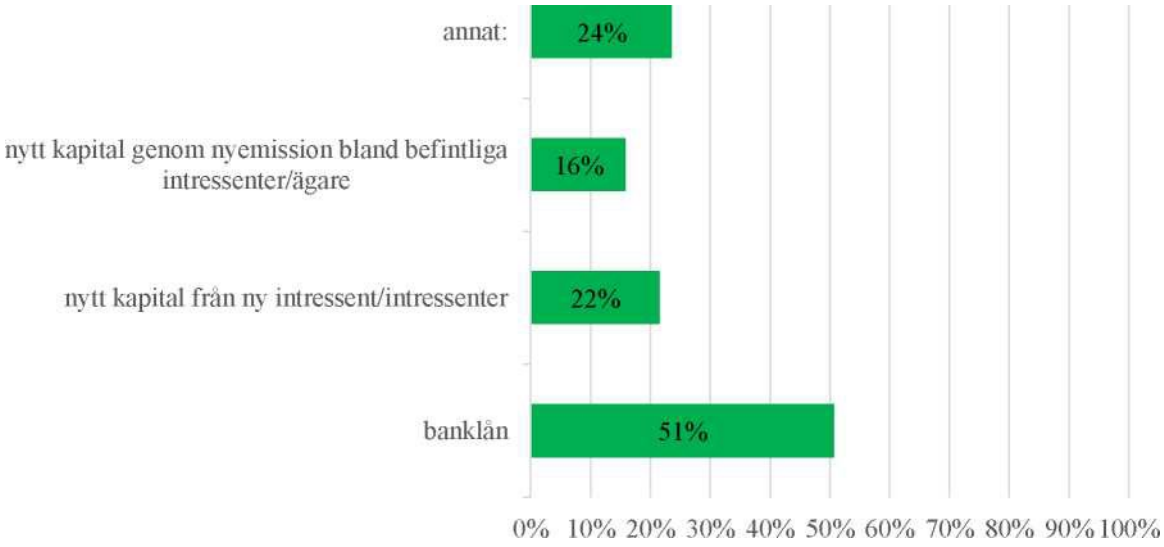
Question 27 Has the aid granted led to more investment by: the same type within your organisation?



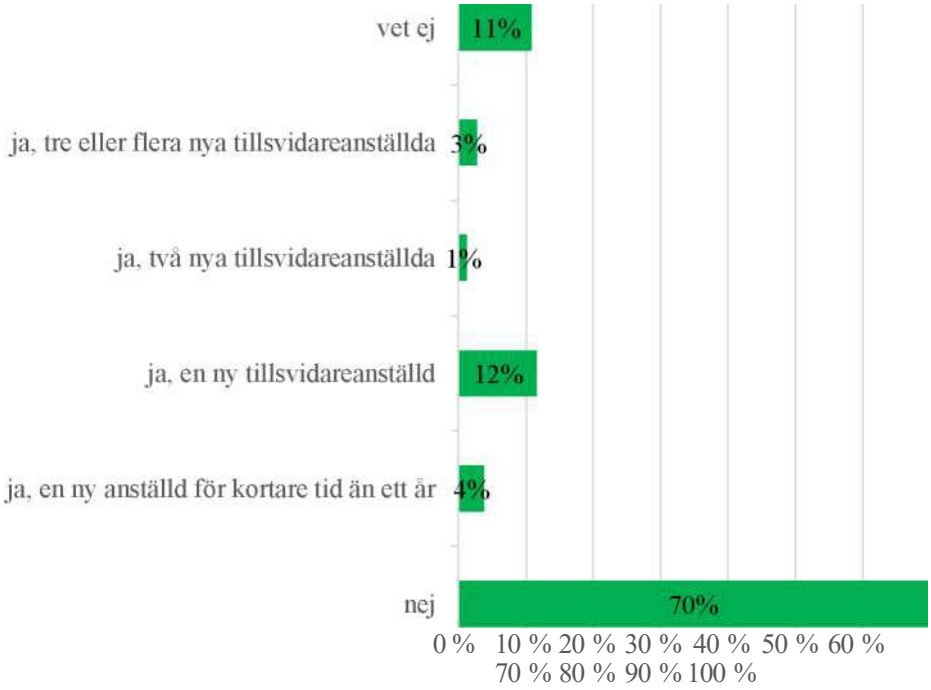

Fråga 28 Har er åtgärd uppmärksammats av andra?
ja, nämligen på så sätt att ...
7%
ja, vi har blivit kontaktade av individer som nyttjat/sett åtgärden
31%
ja, vi har blivit kontaktade av andra organisationer/företag
39%
ja, åtgärden har nämnts i press/media
25%
ja, vi har blivit kontaktade av press/media
17%
nej, inte vad jag känner till
32%
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%


Question 29. Has the support from Climate Leap made it easier to get more/new funding?
yes, Climate Leap has facilitated access to finance to other investments
8%
yes, Climate Leap has facilitated access to finance towards more green investments
12%
yes, Climate Leap has made it easier to get part-financing of the action
23%
no, cannot see that Climate Leap has had an impact on what relates to the willingness to invest
14%
don't know – did not try to raise new/more capital for the measure or other similar measures
52%
0 % 10 % 40 % 20 % 30 % 50 % 60 % 70 % 80 % 90 % 100 %

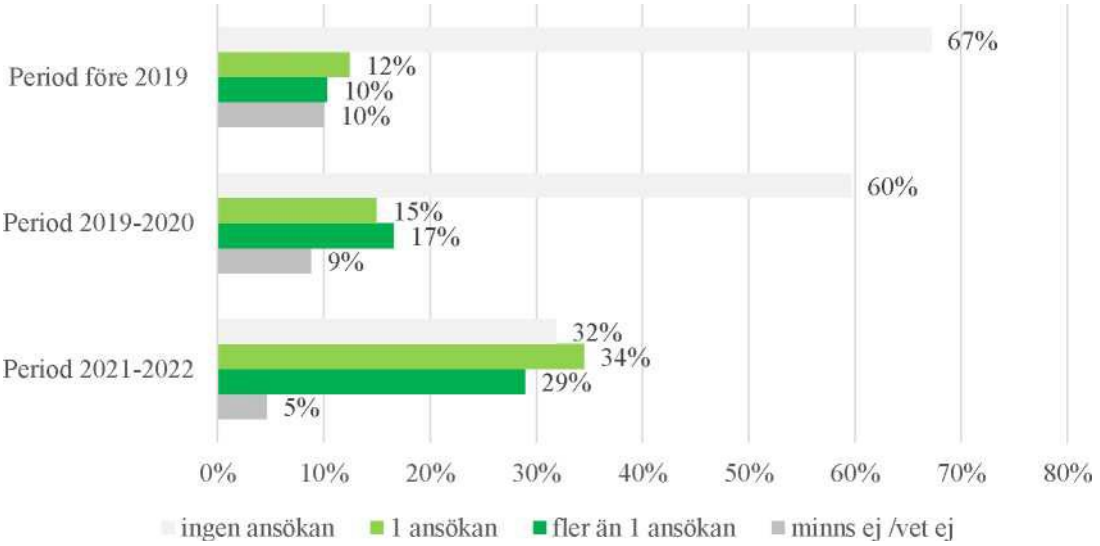
Question 30 What type of financing has Climate Leap facilitated: few?



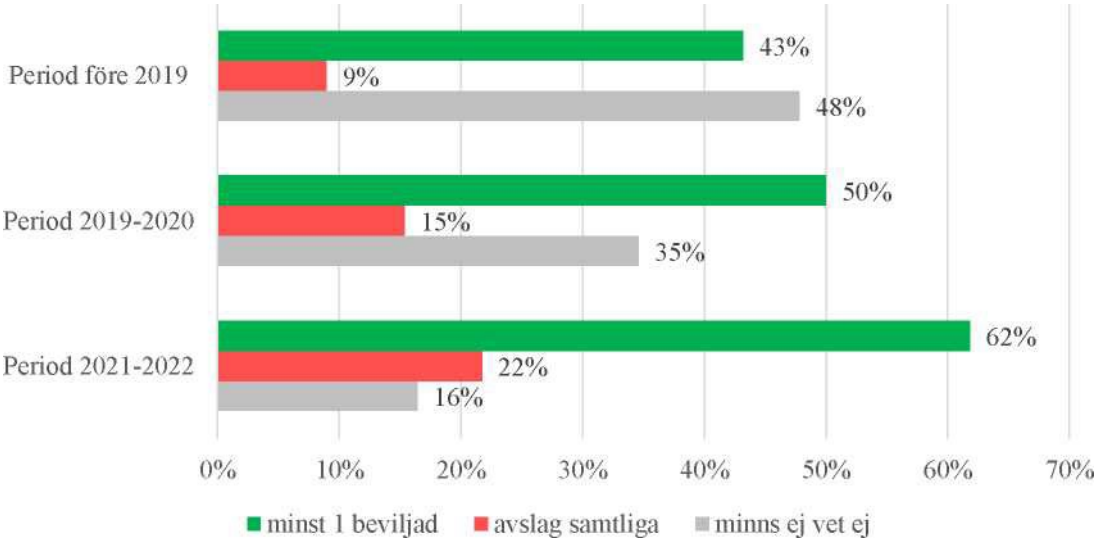
Question 31 Has the aid from Climate Leap resulted in new jobs (full-time or part-time)?



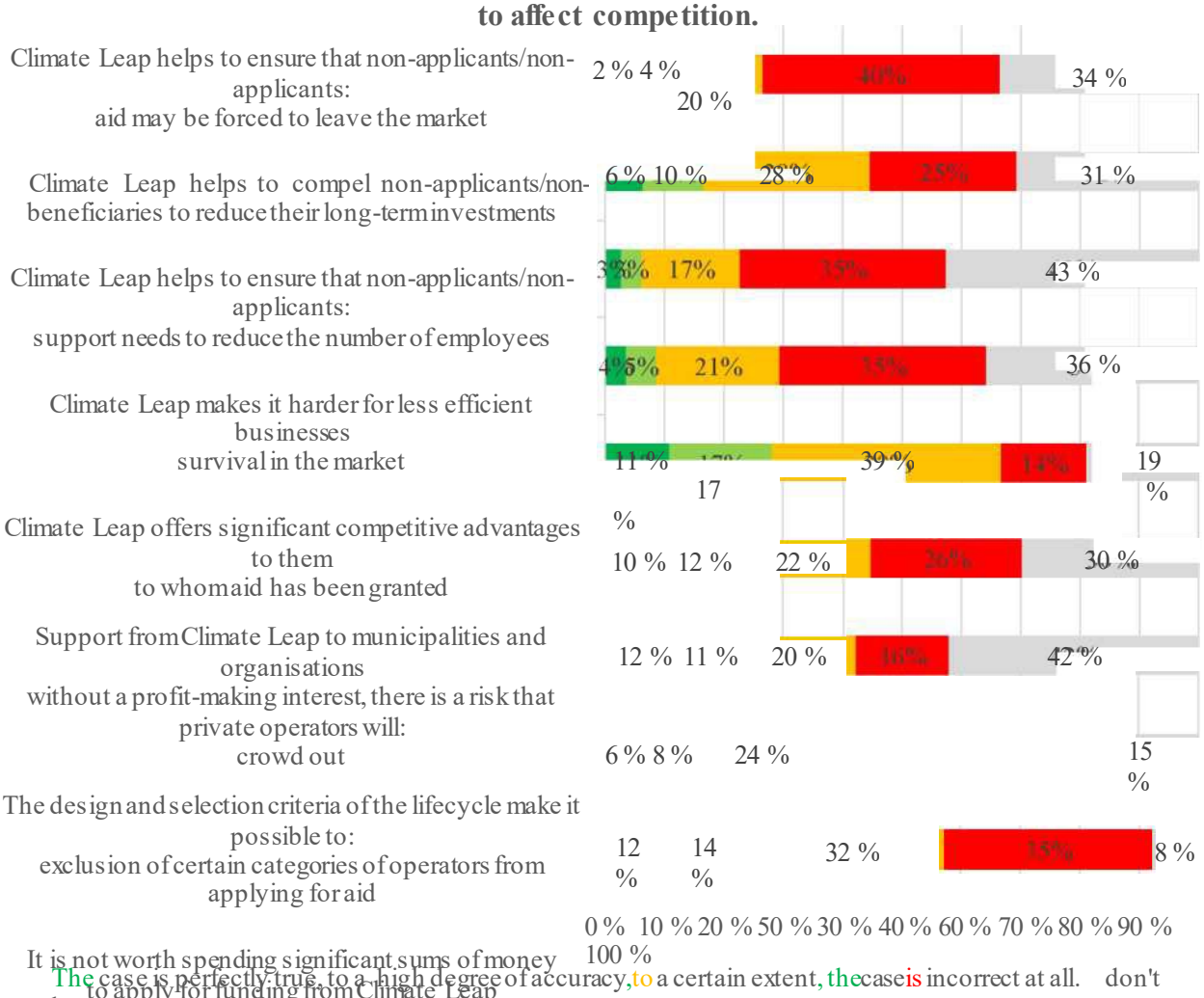
Question 32.1 How we want to know whether you/your organisation has applied climate Leap funding in the past application periods and if there has been more than one application;



Question 32.2 How we want to know whether you/your organisation has applied funding from Climate Leap in previous application periods and how they fell out.



**Question 33 Here we want to know how well the statements below are consistent with:
your perception of how support from Climate Leap in general can come to affect competition.**



Question 3.1 To what extent is it true that the following was a reason why your organisation wanted to implement the action for which you applied for a grant through Climate Leap?

Climate reasons (e.g. reducing CO2 emissions)

	By number	%
perfectly correct	745	62 %
to a high degree of accuracy	328	27 %
partially correct	113	9 %
not true at all	11	1 %
don't know	3	0 %
Total	1200	100 %

Question 3.2 To what extent is it true that the following was a reason why your organisation wanted to implement the action for which you applied for a grant through Climate Leap?

Other environmental reasons (e.g. reduction of air and noise emissions)

	By number	%
perfectly correct	421	36 %
to a high degree of accuracy	362	31 %
partially correct	257	22 %
not true at all	104	9 %
don't know	13	1 %
Total	1157	100 %

Question 3.3 To what extent is it true that the following was a reason why your organisation wanted to implement the action for which you applied for a grant through Climate Leap?

Economic motivation (e.g. leading to lower operating costs)

	By number	%
perfectly correct	390	33 %
to a high degree of accuracy	291	25 %
partially correct	292	25 %
not true at all	180	15 %
don't know	29	2 %
Total	1182	100 %

Question 3.4 To what extent is it true that the following was a reason why your organisation wanted to implement the action for which you applied for a grant through Climate Leap?

External circumstances (e.g. upcoming legal requirements, procurement procedures, etc.)

	By number	%
perfectly correct	136	12 %
to a high degree of accuracy	197	17 %
partially correct	269	23 %
not true at all	465	40 %
don't know	93	8 %
Total	1160	100 %

Question 3.5 To what extent is it true that the following was a reason why your organisation wanted to implement the action for which you applied for a grant through Climate Leap?

Enabling entry into a new market

	By number	%
perfectly correct	195	17 %
to a high degree of accuracy	169	15 %
partially correct	257	22 %
not true at all	469	41 %
don't know	66	6 %
Total	1156	100 %

Question 3.6 To what extent is it true that the following was a reason why your organisation wanted to implement the action for which you applied for a grant through Climate Leap?

Provides positive competitive advantages

	By number	%
perfectly correct	269	23 %
to a high degree of accuracy	299	26 %
partially correct	352	30 %
not true at all	203	17 %
don't know	48	4 %
Total	1171	100 %

Question 4.1 To what extent is it true that the following was a reason why your organisation chose to apply for funding from Climate Leap?

Economic justification (necessary for the implementation of the action)

	By number	%
perfectly correct	740	61 %
to a high degree of accuracy	339	28 %
partially correct	101	8 %
not true at all	20	2 %
don't know	4	0 %
Total	1204	100 %

Question 4.2 To what extent is it true that the following was a reason why your organisation chose to apply for funding from Climate Leap?

Symbol reason (a value in itself that the measure is part of Climate Leap)

	By number	%
perfectly correct	139	12 %
to a high degree of accuracy	272	23 %
partially correct	363	31 %
not true at all	356	30 %
don't know	39	3 %
Total	1169	100 %

Question 4.3 To what extent is it true that the following was a reason why your organisation chose to apply for funding from Climate Leap?

Gives the right to use the Climate Leap logo

	By number	%
perfectly correct	57	5 %
to a high degree of accuracy	134	12 %
partially correct	304	26 %
not true at all	573	49 %
don't know	92	8 %
Total	1160	100 %

Question 4.4 To what extent is it true that the following was a reason why your organisation chose to apply for funding from Climate Leap?

Improve contact with authorities

	By number	%
perfectly correct	61	5 %
to a high degree of accuracy	145	12 %
partially correct	353	30 %
not true at all	495	43 %
don't know	107	9 %
Total	1161	100 %

Question 5

Has your organisation chosen to implement the action for which you received funding?

	By number	%
yes	648	97 %
no	21	3 %
Total	669	100 %

Question 6 What was/were the reason (s) why you chose not to implement the project and instead reimburse the money? (multiple selection)

	By number	%
changes in the economic environment	7	37 %
delayed schedule	7	37 %
changing the technological environment	4	21 %
the measure received support from other financiers	0	0 %
changed staffing conditions	2	11 %
other reason	9	47 %
Total	19	153 %

Question 7 Has the measure you received funding been finally reported?

	By number	%
yes	320	50 %
no	325	50 %
Total	645	100 %

Question 8 How much was the final reported measure compared to the application?

The measure was carried out in...

	By number	%
... smaller scope than in the application	13	4 %
... the same scope as in the application	279	87 %
... greater than in the application	28	9 %
Total	320	100 %

Question 9

How much less was the scope of the implemented measure compared to what was described in the application? The measure was implemented until...

	By number	%
approx. 25 %	7	54 %
approx. 50 %	2	15 %
approx. 75 %	4	31 %
Total	13	100 %

Question 10

How much greater was the scope of the implemented measure compared to what was described in the application? The measure was extended by...

	By number	%
approx. 25 %	14	52 %
approx. 50 %	10	37 %
approx. 75 %	2	7 %
100 % or more	1	4 %
Total	27	100 %

Question 11

What has meant that the measure did NOT receive funding from Climate Leap?
The measure has..

	By number	%
... not implemented at all	287	55 %
... carried out according to the application but to a lesser extent	70	13 %
... carried out in accordance with the application and to the same extent	121	23 %
... carried out according to the application but to a greater extent	6	1 %
... instead, it has been replaced by another technical solution, namely	37	7 %
Total	521	100 %

Question 12

What would you think it would have been if the measure did NOT receive funding via:
Climate Leap? The measure was...

	By number	%
... not implemented at all	420	64 %
... carried out according to the application but to a lesser extent	166	25 %
... carried out in accordance with the application and to the same extent	52	8 %
... carried out according to the application but to a greater extent	1	0 %
... instead, it has been replaced by another technical solution, namely	17	3 %
Total	656	100 %

Question 13

Do you have plans to implement the measure/similar measures in the future?

	By number	%
yes	138	48 %
no	41	14 %
don't know	108	38 %
Total	287	100 %

Question 14

How much impact in terms of reducing climate gas emissions (compared to the application) do you consider that the alternative technical solution has resulted?

	By number	%
less than 25 % of the impacts we have calculated in the application	3	9 %
approximately 25 % of the impacts we have calculated in the application	2	6 %
approximately 50 % of the impacts we have calculated in the application	5	15 %
approximately 75 % of the impacts we have calculated in the application	2	6 %
effects equal to those included in the application	21	64 %
Total	33	100 %

Question 15

How much impact in terms of reducing climate gas emissions (compared to the application) do you consider that the alternative technical solution would have resulted?

	By number	%
less than 25 % of the impacts we have calculated in the application	3	19 %
approximately 25 % of the impacts we have calculated in the application	0	0 %
approximately 50 % of the impacts we have calculated in the application	1	6 %
approximately 75 % of the impacts we have calculated in the application	0	0 %
effects equal to those included in the application	12	75 %
Total	16	100 %

Question 16

How much less (compared to what was described in the application) was the implementation of the measure? The action has been implemented by...

	By number	%
approx. 25 %	23	33 %
approx. 50 %	27	39 %
approx. 75 %	19	28 %
Total	69	100 %

Question 17

How much less (compared to what was described in the application) do you think that the implementation of the measure would have been if your organisation did not receive funding from Climate Leap? The action had been implemented by...

	By number	%
approx. 25 %	43	26 %
approx. 50 %	102	62 %
approx. 75 %	19	12 %
Total	164	100 %

Question 18

If your organisation did NOT receive funding from Climate Leap, what would have been the impact of the action's timetable? The measure was...

	By number	%
... carried out according to the initial schedule	89	38 %
... postponed	147	62 %
Total	236	100 %

Question 19

When do you estimate that the action/similar measure will be implemented?

	By number	%
within approximately 6 months	14	10 %
within approximately 1 years	43	31 %
within approximately 2 years	28	20 %
within approximately 3 years	15	11 %
within approximately 4 years	2	1 %
within approximately 5 years	26	19 %
in 5 years or more	9	7 %
Total	137	100 %

Question 20

How will you mainly finance the measure/similar measure? The part of the measure that had been financed by Climate Leap will instead be financed mainly by...

	By number	%
internal private funding	22	16 %
internal public finishing	10	7 %
external private finishing	6	4 %
external public funding (other than Climate Leap)	13	10 %
received a new application to Climate Leap	14	10 %
will submit a new application to Climate Leap	71	52 %
Total	136	100 %

Question 21

How much do you estimate that the action had been delayed?

	By number	%
approx. 6 months	7	5 %
approx. 1 years	49	33 %
approx. 2 years	54	37 %
approx. 3 years	22	15 %
approx. 4 years	4	3 %
approx. 5 years	4	3 %
more than 5 years	7	5 %
Total	147	100 %

Question 22

How has the measure been financed mainly when you did not receive funding from Climate Leap? Instead, the part of the measure that was to be financed through Climate Leap has been financed mainly by...

	By number	%
internal private funding	134	60 %
internal public finishing	36	16 %
external private finishing	37	17 %
external public philanthropy	17	8 %
Total	224	100 %

Question 23

How would the measure be financed mainly if you did not receive funding from Climate Leap? Instead, the part of the measure financed by Climate Leap was mainly financed by...

	By number	%
internal private funding	133	63 %
internal public finishing	27	13 %
external private finishing	41	19 %
external public philanthropy	11	5 %
Total	212	100 %

Question 24

Your organisation received [here the share of funding received] funding of the total cost of the action.

What would it have been if your organisation received only [*here was the share of funding minus 10 percentage points*] funding of the total cost of the action? The measure was...

	By number	%
... not implemented at all	125	19 %
... to a lesser extent than in the application	295	45 %
... carried out to the same extent as in the application	232	36 %
... was carried out to a greater extent than in the application	0	0 %
Total	652	100 %

Question 25

What is the minimum level of co-financing from Climate Leap that would have been required for you to implement the measure on a full scale?

	By number	%
we had implemented the measure even without co-financing	52	8 %
approx. 10 % co-financing	7	1 %
approx. 25 % co-financing	98	15 %
approx. 50 % co-financing	315	49 %
approx. 70 % co-financing	122	19 %
we had not started the action without 100 % co-financing	51	8 %
Total	645	100 %

Question 27

Has the aid granted led to more investments of the same type within its own organisation?

	By number	%
yes, with renewed application to Climate Leap also granted	138	21 %
yes, applying for other external public funding that has also been awarded	19	3 %
yes, with other external private funding	12	2 %
yes, with internal funding	63	10 %
no	341	53 %
don't know	71	11 %
Total	644	100 %

Question 28

Has your action been brought to the attention of others? (multiple selection)

	By number	%
no, not what I know	204	32 %
yes, we have been contacted by the press/media	113	17 %
yes, the measure has been mentioned in the press/media	163	25 %
yes, we have been contacted by other organisations/companies	253	39 %
yes, we have been contacted by individuals who used/seen the measure	200	31 %
yes, in the sense that...	44	7 %
Total	646	151 %

Question 29

Has the support from Climate Leap facilitated more/new funding? (multiple selection)

	By number	%
don't know – did not try to raise new/additional capital for the measure or for other similar actions	337	52 %
no, Climate Leap does not see any impact on investment willingness	91	14 %
yes, Climate Leap has facilitated co-financing of the measure	153	23 %
yes, Climate Leap has facilitated funding for more green investments	81	12 %
yes, Climate Leap has facilitated access to finance for other investments	51	8 %
Total	653	109 %

Question 30

What type of funding has Climate Leap made it easier to get? (multiple selection)

	By number	%
Bank loans	99	51 %
new capital from new stakeholder/stakeholders	42	22 %
new capital through new issuance among existing stakeholders/owners	31	16 %
other:	46	24 %

Total	195	112 %

Question 31

Has the aid from Climate Leap resulted in new employment (full-time or part-time)?

	By number	%
no	455	70 %
yes, a new employee for less than one year	25	4 %
yes, a new permanent worker	76	12 %
yes, two new permanent workers	8	1 %
yes, three or more new permanent workers	18	3 %
don't know	71	11 %
Total	653	100 %

Question 32.1.1

Here we would like to know whether you/your organisation applied for funding from Climate Leap in previous application periods, whether there has been more than one application and how it was received. Before 2019.

	By number	%
no application	650	67 %
1 application	120	12 %
more than 1 applications	100	10 %
do not remember/don't know	97	10 %
Total	967	100 %

Question 32.2.1

Here we would like to know whether you/your organisation applied for funding from Climate Leap in previous application periods, whether there has been more than one application and how it was received. Before 2019.

	By number	%
at least 1 granted	159	43 %
rejected all	33	9 %
don't know to remember	176	48 %
Total	368	100 %

Question 32.1.2

Here we would like to know whether you/your organisation applied for funding from Climate Leap in previous application periods, whether there has been more than one application and how it was received. Period 2019-2020.

	By number	%
no application	583	60 %
1 application	146	15 %
more than 1 applications	162	17 %
do not remember/don't know	86	9 %
Total	977	100 %

Question 32.2.2

Here we would like to know whether you/your organisation applied for funding from Climate Leap in previous application periods, whether there has been more than one application and how it was received. Period 2019-2020.

	By number	%
at least 1 granted	218	50 %
rejected all	67	15 %
don't know to remember	151	35 %
Total	436	100 %

Question 32.1.3 How we want to know whether you/your organisation applied for funding from Climate Leap in previous application periods, whether there has been more than one application and how it was received. Period 2021-2022.

	By number	%
no application	328	32 %
1 application	355	34 %
more than 1 applications	298	29 %
do not remember/don't know	48	5 %
Total	1029	100 %

Question 32.2.3 How we want to know whether you/your organisation applied for funding from Climate Leap in previous application periods, whether there has been more than one application and how it was received. Period 2021-2022.

	By number	%
at least 1 granted	384	62 %
rejected all	135	22 %
don't know to remember	102	16 %
Total	621	100 %

Question 33.1 Here, we would like to know how well the statements below are in line with your view on how Climate Leap aid in general may affect competition.

Climate Leap helps to force non-applicant/unaided operators to leave the market

	By number	%
perfectly correct	29	2 %
to a high degree of accuracy	53	4 %
partially correct	237	20 %
not true at all	478	40 %
don't know	402	34 %

Total	1199	100 %

Question 33.2 Here, we would like to know how well the statements below are in line with your view on how Climate Leap aid in general may affect competition.

Climate Leap helps to compel non-applicants/non-beneficiaries to reduce their long-term investments

	By number	%
perfectly correct	76	6 %
to a high degree of accuracy	123	10 %
partially correct	337	28 %
not true at all	296	25 %
don't know	368	31 %
Total	1200	100 %

Question 33.3 Here, we would like to know how well the statements below are in line with your view on how Climate Leap aid in general may affect competition.

Climate Leap helps to reduce the number of employees who do not apply/do not receive aid

	By number	%
perfectly correct	32	3 %
to a high degree of accuracy	41	3 %
partially correct	199	17 %
not true at all	415	35 %
don't know	509	43 %
Total	1196	100 %

Question 33.4 Here, we would like to know how well the statements below are in line with your view on how Climate Leap aid in general may affect competition.

Climate Leap makes it harder for less efficient companies to survive in the market

	By number	%
perfectly correct	42	4 %
to a high degree of accuracy	61	5 %
partially correct	249	21 %
not true at all	418	35 %
don't know	428	36 %
Total	1198	100 %

Question 33.5 Here, we would like to know how well the statements below are in line with your view on how Climate Leap aid in general may affect competition.

Climate Leap offers significant competitive advantages to beneficiaries of aid granted

	By number	%
perfectly correct	130	11 %
to a high degree of accuracy	207	17 %
partially correct	461	39 %
not true at all	172	14 %
don't know	226	19 %
Total	1196	100 %

Question 33.6 Here, we would like to know how well the statements below are in line with your view on how Climate Leap aid in general may affect competition.

Support from Climate Leap to municipalities and non-profit organisations risks crowding out private operators

	By number	%
perfectly correct	123	10 %
to a high degree of accuracy	143	12 %
partially correct	268	22 %
not true at all	304	26 %
don't know	354	30 %
Total	1192	100 %

Question 33.7 Here, we would like to know how well the statements below are in line with your view on how Climate Leap aid in general may affect competition.

The design and selection criteria of the lifecycle exclude certain categories of operators from applying for aid

	By number	%
perfectly correct	142	12 %
to a high degree of accuracy	127	11 %
partially correct	236	20 %
not true at all	187	16 %
don't know	502	42 %
Total	1194	100 %

Question 33.8 Here, we would like to know how well the statements below are in line with your view on how Climate Leap aid in general may affect competition.

It is not worth spending significant amounts of money to seek funds from Climate Leap

	By number	%
perfectly correct	72	6 %
to a high degree of accuracy	98	8 %
partially correct	289	24 %
not true at all	554	46 %
don't know	183	15 %
Total	1196	100 %

Question 33.9 Here, we would like to know how well the statements below are in line with your view on how Climate Leap aid in general may affect competition.

The application process is complex and costly, making it difficult for smaller operators to apply for aid

	By number	%
perfectly correct	139	12 %
to a high degree of accuracy	166	14 %
partially correct	381	32 %
not true at all	418	35 %
don't know	93	8 %
Total	1197	100 %

Annex 2. The survey

The purpose of this study is to find out the impact of measures that have been granted financial support through Climate Leap in 2021 and/or 2022.

The questions in this questionnaire relate to the request for finalising the case number.

Your answers are important even if the action has not been implemented exactly as originally intended.

Should you have any questions about the study/evaluation, please contact Jenny Wallström by email jenny.wallstrom@wsp.com

If you have any technical questions about the survey itself, please contact Ms Kia Hultin by email kia.hultin@wsp.com

Ahead of the upcoming interview, we would like to ask you to answer some questions on whether you feel that Climate Leap has any impact on markets and competition.

NATURE
VATTRDSA
WORK ©

To the extent that it is correct the following was a reason why your the organisation wanted to make it a single place for which you applied for a grant through:
Climate Leap?

	correct Heit and the holding	correct high grade	correct to some part	correct not at all	don't know
Climate reasons (e.g. decreasing CO2 emissions)	O	O	O	O	O
Other environmental reasons (e.g. reduction of air and noise emissions)	o	o	o	o	0
Economic motivation (e.g. leading to low er operating costs)	o	o	o	Q	O
External circumstances (e.g. upcoming legal requirements, procurement procedures, etc.)	o	o	o	o	0
Enables the creation of a new market	o	o	o	o	o
Provides positive competitive advantages	o	o	o	o	0

NATURE VARDSA WORKS ©

To what extent is it true that the following was a reason why your organisation chose to apply for funding from Climate Leap?

	correct Heit and the holding	correct high grade	correct to some part	correct not at all	don't know
Economic justification (necessary for the implementation of the measure)	O	O	O	O	O
Symbol reason (a value in itself that the measure is part of Climate Leap)	o	o	o	o	O
Gives the right to use the logo for Climate Leap	o	Q	o	o	O
Improve contact with authorities	o	Q	o	o	o

Has the DIU organisation opted to implement the action for which you received funding?

NATURE
VÄRDS A
VERKETHERIES

ΩΣΙ)

What were the reasons why you chose not to implement the project and instead reimburse the money?

(more answers are possible)

Flavouring Changes in the economic environment

Pertaining to the delay in the timetable

Flavouring Changes in the technological environment

The measure received support from other financiers;

Accrued changes in staffing conditions

Apart from any other reason

Has the measure you received funding for shit reported?

O yes

O No

NATURE
VATT RDSA, THE BOARD OF APPEAL, ΩΣΙ)

How covered was deu reported measures compared to the application?

The measure was carried out in...

(This is to be understood as an implementation that has given less climate benefits than stated in the application to Climate Leap and a larger extent of implementation that has resulted in a higher climate nut than described in the application)

O •• Less in scope than in the application

O... the same scope as in the application

O... greater than in the application

NATURE
VATTRDSA
WORK©

How much did lUl u die become the scope of the measure implemented compared to what was described in the ausökau?

The measure was implemented until...

O approx. 25 %

O approx. 50 %

O approx. 75 %

How much greater was the scope of the implemented measure compared to what was described in the application?

The measure was extended by...

O approx. 25 %

O approx. 50 %

O approx. 75 %

O 100 % or more

NATURE VATT RDSA WORKS ©

ΩΣΙ)

What Hai 's iuuebard is that the measure NOT GROUBLIC funding via the Kliiuatklivet?

The measure has...

O -.Not implemented at all

O... implemented as requested but to a lesser extent

O... carried out in accordance with the application and to the same extent

O... was implemented in accordance with the application, but to a greater extent Q... has instead been replaced by another technical solution, namely...

(Scale here refers to the climate impact compared to what was described in the application).

What do you think would have meant if the measure did NOT receive funding from the Kliiuatklivet?

The measure was...

O -.Not implemented at all

O... implemented as requested but to a lesser extent

O... carried out in accordance with the application and to the same extent

O... was implemented in accordance with the application, but to a greater extent Q... has instead been replaced by another technical solution, namely...

(Scale here refers to the climate impact compared to what was described in the application).

NATURE
THE WORK OF VATT RDSA ©

Hai 'you plan to carry out the measures/similar measures in the future?

O yes
O "not
O don't know

Nature OF THE VERKET ©

How much impact in terms of reducing climate gas emissions (compared to the application) do you consider that the alternative technical solution has resulted?

O less than 25 % of the impacts we have calculatedin the application

O approximately 25 % of the impacts we have calculated in the application

O approximately 50 % of the impacts we have calculated in the application

O approximately 75 % of the impacts we have calculated in the application

Q effects equal to those included in the application

What is your assessment of the impact in terms of miuculated climate gas emissions (compared to the application) that the alternative technical solution would have resulted?

O less than 25 % of the impacts we have calculatedin the application

O approximately 25 % of the impacts we have calculated in the application

Q approximately 50 % of the impacts we have calculated in the application

O approximately 75 % of the impacts we have calculated in the application

O effects equal to those included in the application

NATURE
REQUIREMENTS
WORK ®

ΩΣΙ)

How much less (compared to what was described in the application) was the implementation of the measure?

The action was carried out until...

O approx. 25 %

O approx. 50 %

O approx. 75 %

How much less (compared to what was described in the application) do you think that the implementation of the measure would have been if your organisation did not receive funding from Climate Leap?

The measure had been geuomised to...

O approx. 25 %

O approx. 50 %

O approx. 75 %

NATURE
THE WORK OF VATT RDSA ©

What did it iuuebore for the timing of the action?

The measure was...

O... carried out according to the initial schedule

O... postponed

Nature ATA VERKET ©

∴∴ Σ |)

When do you estimate that the action/similar measure will be implemented?

O within approximately 6 months

O within approximately 1 years

O within approximately 2 years

Q within approximately 3 years

O within approximately 4 years

O within approximately 5 years

O in 5 years or more

How will you mainly finance the measure/measure similar to the measure?

The part of the measure that had been financed by Climate Leap will instead be financed mainly by...

(Not public funding refers to public activities that invest their own money. External public funding refers to public activities receiving funding, support from other public activities)

O internal private financing

O internal public finishing

O External private finishing

O External public funding (other than Climate Leap)

O received a new application to Climate Leap

Q will submit a new application to Climate Leap

How much do you estimate that the action had been delayed?

O approx. 6 months

Q approx. 1 years

O approx. 2 years

O approx. 3 years

O approx. 4 years

O approx. 5 years

O more than 5 years

NATURE VARDSA WORKS ©

The Hui'hai action was mainly financed when you did not receive funding from Climate Leap?

Instead, the part of the measure that was to be financed through Climate Leap has been financed mainly by...

(Not public funding refers to public activities that invest their own money. External public funding refers to public activities supported by other public activities)

O internal private financing

O internal public finishing

O External private finishing

O External public fiantisation

Did Hui 'have the measure been financed mainly if you did not receive funding from Climate Leap?

Instead, DEU's part of the action financed by Climate Leap was mainly financed by...

(Not public funding refers to public activities that invest their own money. External public funding refers to public activities receiving funding, support from other public activities)

O internal private financing

O internal public finishing

O External private finishing

O External public fiantisation

In the first sentence of the question below, the proportion in XXX% of the total cost granted was linked. On the question itself, the percentage granted was linked minus 10 percentage points YYY%.

NATURE
OPERATIONS

Your organisation received XXX% funding of the total cost of the action.

What would it have been if your organisation received only YYY% funding of the total cost of the action?

The measure was...

O... not implemented at all

o... to a lesser extent than in the application

O... to the same extent as in the application

O... has been implemented more than in the application

What is the lowest level of nil funding from Climate Leap that would have been required for you to implement the measure on a full scale?

(Full scale means implementation as described in the application to Climate Leap)

O we had implemented the measure even without co-financing

O approx. 10 % co-financing

O approx. 25 % co-financing

o approx. 50 % co-financing

O approx. 70 % co-financing

O We had not started the action without 100 % co-financing

Here you have the opportunity to comment/clarify your answer regarding the minimum level of uiedfiuausieriug from Climate Leap:

NATURE VÂR DS À WORK ©

WSP

Hai· the aid granted resulted in more investments of the same type within its own organisation?

Q yes, with renewed application to Climate Leap also granted

O yes, with application for other external public funding also granted

O yes, with other external private funding

O yes, with internal funding

O neJ

O don't know

NATURE
HOST
WORK ©

WSP

Has your action been brought to the attention of others?

(multiple answers possible)

Q no, not what I know

In| ja. we have been contacted by the press/media ūja, themeasure has been mentioned in the press/ media attja, we have been contacted by other organisations/company Q yes, we have been contacted by individuals who have seen the measure Q yes, namely in the sense that...

NATURE
VATT RDSA
WORK ©

Has the aid Mrs Kliiuatklivet facilitated more/new funding?

Multiple answers are possible.

I- does not know – has not attempted to raise new /additional capital for the action or for other similar measures

Ms Klima tklivet did not see that Klima tklivet had an impact on the willingness to invest

Taxpayer ja, Climate Leap has made it easier to obtain co-financing for the action

Taxpayer ja, Climate Leap has facilitated access to finance for more green investments

Taxpayer ja, Climate Leap has facilitated access to finance for other investments

NATURE
Care for the TFE
WORK ©

WSP

What kind of funding has Kliiuatklivet made it easier to get?

Several options are possible.

Q Bank loans

Q new capital from new stakeholders

• New capital through new issuance among existing stakeholders/owners

Q other:

Has the support provided by the Kliiiatklivet resulted in precarious employment (full-time or part-time)?

O No

O j. A new employee for less than one year

Q yes, a new permanent worker

O yes, two new permanent workers

O yes, three or more new permanent workers

NATURE
MR VARDS
WORK ©

Here we want to know 0111 you/your organisation applied for funding from Climate Leap in previous application periods, whether it was more than one application and how it fell out.

	Applications			Outcome		
	none application	1	more than 1	refusals are remembered 1 not	not all granted application/don't know	don't know
Pe.tod before 2019				O	O	O O
Period 2019 – 2020				O	O	O O
Period 2021 – 2022				i O	O	O O

NATURE VARDSA WORKS ©

On the other hand, in addition to positive climate effects, aid from Klimatkhvet may have negative effects in terms of competition in the market.

We would like to know how well the statements below are in line with your view on how support from Kliinatklivet in general may affect competition.

	correct Heit and Remark	to a high degree of accuracy	partially correct	not true at all	don't know
Kliinatklivet is involved in forcing non-seeking/unaided operators to leave the market	Q	O	Q	O	O
Kliinatklivet helps to reduce long-term investment by non-applicants/non-beneficiaries	Q	o	Q	o	O

Climate Leap helps to reduce the number of employees who do not apply for/do not receive support	O	o	o	o	o
Climate Leap makes it harder for less efficient companies to survive in the market	o	o	o	o	0
Climate Leap offers significant competitive advantages to beneficiaries of aid granted	o	o	o	o	0
Support from Climate Leap to municipalities and non-profit organisations risks crowding out private operators	o	o	o	o	0
The design and selection criteria of Kihuatklivet exclude certain categories of operators from applying for aid	o	o	o	o	0
It is not worth spending significant amounts of peugs to seek funds from Climate Leap	o	o	o	o	0
The application process is complex and costly, making it difficult for smaller operators to apply for aid	o	o	o	o	o

Please elaborate on your answers and tell us how you think about the possible competitive effects of Climate Leap:

If you have comments or don't hesitate to do so, please provide them here:

NATURE
VI RDSATT WORKS ®

Tack för din medverkan!

KLIMAT KLIVET
Lokala klimatinvesteringar. Mätbara resultat.

Dina svar är sparade och inskickade.