

N2EG SUMMATIVE ASSESSMENT

January 2021

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European Union
European Regional
Development Fund

1. Introduction

The N2EG project aims to provide a means to enable SMEs to adopt energy efficiency measures within the business including the introduction of renewable energy solutions and low carbon technologies. This applied to improving the energy performance of both the buildings they occupy and, where relevant, their production processes.

This report provides an ERDF-compliant summative assessment of N2EG. It has been produced by Clive La Court, Economic Research and Evaluation Officer, Economic Development, Nottingham City Council.

The purpose of a summative assessment is to provide insights into project performance to enhance their implementation, reliable evidence of their efficiency, effectiveness and value for money, and insights into what and why interventions work (or not) and lessons for the future. This is particularly important as a successor project (ARC) is due to be implemented, with ERDF funding support, from 01/01/2021 to 30/06/2023.

The assessment was undertaken in two consecutive phases:

- This first phase involved an e-survey of businesses who have been in receipt of N2EG support (advice and/or financial assistance) which was conducted by Nottingham City Council (Economic Development Team) during August 2020. Overall, 35 (29%) respondents completed and returned the questionnaire and the findings are based on an analysis of these responses.
- The second phase involved interviews with key stakeholders engaged in the management and delivery of N2EG. Telephone interviews were undertaken with the following individuals within Nottingham City Council who have been involved with the development, management and/or delivery of the N2EG project:

David Kelly	N2EG Project Manager
Jake D'Arcy	N2EG Energy Advisor
Svitlana Kouchar	N2EG Accountable Body Manager
Robert Dixon	Head Of Business Growth & International Strategy - Project Sponsor
Gina Clark	Senior Energy Projects Officer
Katie Greenhalgh	Energy Projects Manager
Aidan Jackson	Bidding and Funding Unit Manager
Wayne Bexton	Head of Energy Services

2. Background and Purpose

The N2EG project is funded by the European Regional Development Fund (ERDF) under Operational Priority Axis 4: Supporting the Shift Towards a Low Carbon Economy in All Sectors of both Investment Priority 4b (promoting energy efficiency and renewable energy use in enterprises) and Investment Priority 4f (promoting research and innovation in, and adoption of Low Carbon Technologies). The contract was managed and delivered by Nottingham City Council.

N2EG covers Nottingham and Nottinghamshire, which dovetails with the equivalent Derby and Derbyshire energy audits project which forms part of the ERDF funded D2EE programme, without overlap or duplication.

With regard to strategic context, N2EG has contributed towards achieving aspirations, objectives and targets within:

- Nottingham City Council's Energy Strategy 2010-2020
- Carbon Neutral Nottingham 2020-2028 Action Plan
- D2N2 Energy Strategy 2019-2030

Aims and Objectives

SMEs face various barriers that deter them from adopting energy efficiency measures: they often lack the time and resources to explore energy efficiency options, and they lack information about where and how energy is used in their businesses. Some do not have the internal capacity to develop and implement energy efficiency projects and rarely view energy efficiency as a priority. In many cases, their access to financing for energy efficiency measures is constrained by insufficient capacity to develop bankable projects with financial institutions, who often remain reluctant to provide financial products due to perceived risks and a lack of a suitable product.

The overall aim of N2EG is to reduce energy consumption by SMEs in Nottingham and Nottinghamshire through the introduction and adoption of appropriate energy efficiency measures within the business resulting in a reduction in both business costs and GHG emissions. These measures are supported through the provision of grant assistance to eligible SMEs.

The objectives and targets of the N2EG project are to:

- Work with businesses to undertake audits of energy usage, identifying the potential for renewable energy generation and energy use reduction. This will be supported by the provision of energy efficiency information and guidance and support to implement them. Key target: a minimum of 200 audits will be conducted.
- Invest in energy efficiency measures, processes and renewable generation capacity to improve a business or buildings environmental performance or its resilience to the impacts of climate change. Key target: a minimum of 50 grants will be awarded.
- Support an increase in energy efficiency in enterprises. Key target: a minimum of 550 tonnes of GHG will be saved.
- Establish a working methodology that SMEs trust in reducing their carbon footprint.

N2EG delivers against its objectives by supporting businesses to undertake 'green' diagnostics via an energy audit, providing expert advice from an Energy Adviser. The energy audit is an investigation of the energy used by a company's support and production processes. The results of an energy audit often take the form of a report containing various types of data provided by external sources. The idea is that information and knowledge from the audit is transferred to the receiver, who will then take action in relation to the outcome of the audit.

The second phase of N2EG involves access to a grant scheme to help eligible businesses to invest in energy efficiency measures. The grant scheme is intended to support energy saving projects targeted to the specific needs of each business, reducing energy consumption and delivering reductions in greenhouse gas emissions.

Advice and suggestions are provided to businesses concerning energy efficiency and renewable energy solutions. In energy efficiency, this can include low energy LED lighting, more efficient heating systems, insulation, more efficient cooling and air-conditioning systems using heat exchange, and renewable energy such as Solar PV, Air

Source Heat Pumps, Ground Source Heat Pumps, and the potential for small scale wind power. Innovative technologies will include battery storage solutions and water source heat.

Energy efficiency advice includes the control of current utilities, such as timings of energy use being in line with building operations, temperature set points, switch off campaigns, advice on data monitoring and targeting unusual consumption patterns, and strategies for reduction of energy use in peak charging periods to reduce industry pass through charges.

3. Performance: Beneficiary and Stakeholder Insights

This section of the report focuses on key findings to emerge from the survey of N2EG supported businesses and from the consultation with project stakeholders.

N2EG Business Beneficiary Survey

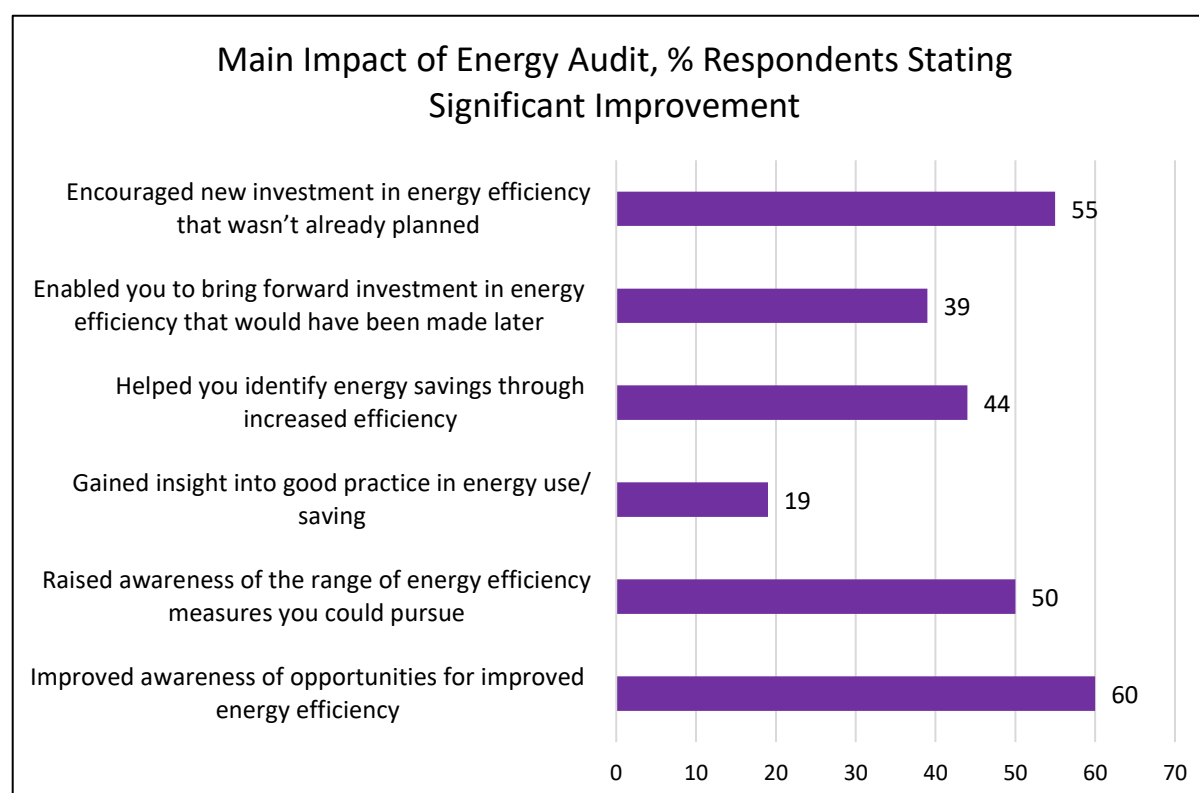
The first phase of this assessment involved an e-survey of businesses who have been in receipt of N2EG support (advice and/or financial assistance) which was conducted by Nottingham City Council (Economic Development Team) during August 2020. Overall, 35 respondents (a response rate of 29%) completed and returned the questionnaire and the findings are based on an analysis of these responses.

Detailed survey findings are set out in **Appendix A**. Here we report on key findings, which were as follows:

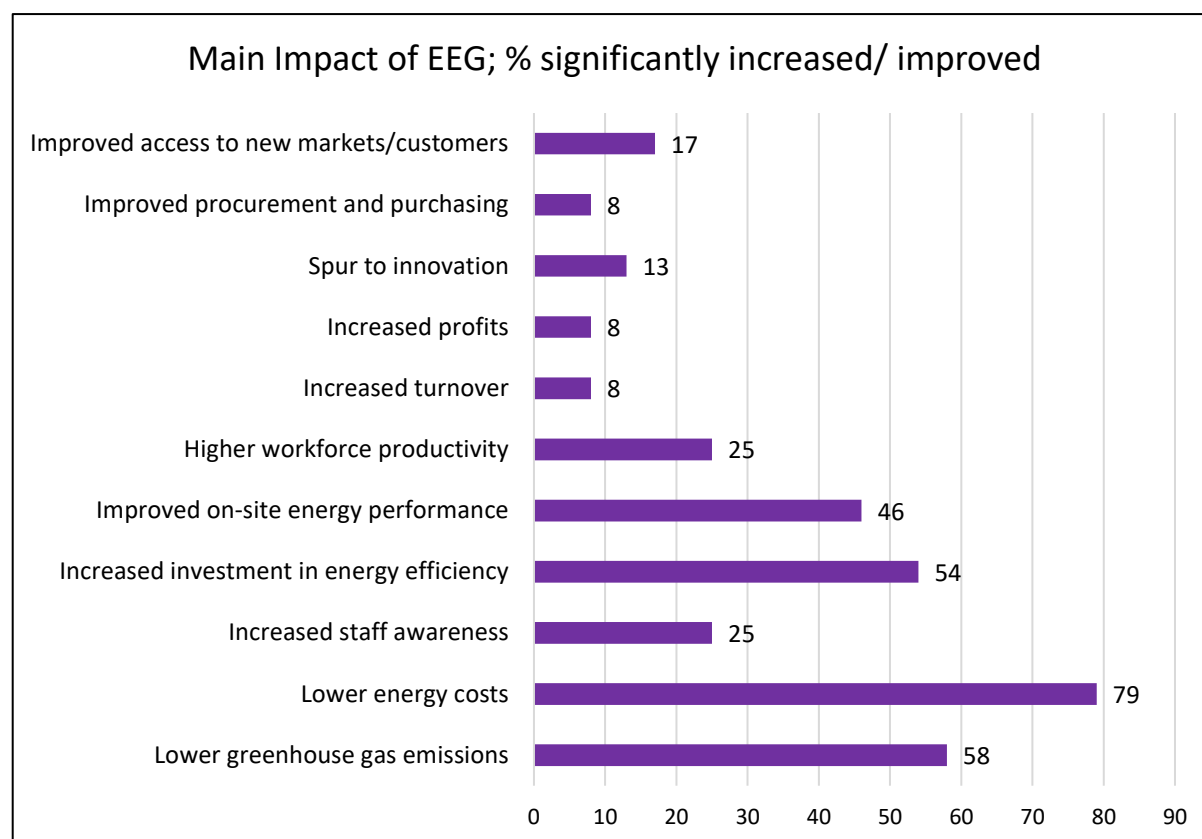
- The most significant business impacts arising from receipt of an Energy Audit were: improved awareness of opportunities for improved energy efficiency (60%); encouraged new/ additional investment in energy efficiency (55%); raised awareness of available and appropriate energy efficiency measures (50%); and bringing forward planned new investment in energy efficiency (39%).
- The main impact of Energy Efficiency Grants were: lower energy costs (79%); lower greenhouse gas emissions (58%); increased business investment in energy efficiency measures (54%); and improved on-site energy performance (46%).
- The estimated average annual reduction in energy costs associated with support (Energy Grant and/or Audit) was £3,900. The highest saving identified was £10,900 and the lowest £1,200.
- Access to support (Grants and/or Audits) had led to a higher priority being placed on energy efficiency by company Boards of Directors and senior management (82%) and the workforce (62%).
- The most significant broader business impacts arising from engagement in N2EG have been improved staff satisfaction and morale (59%); and increased investment in new energy-saving equipment (50%).

Detailed Survey Responses

What were the main benefits and impact of the Energy Efficiency Grant you were awarded?



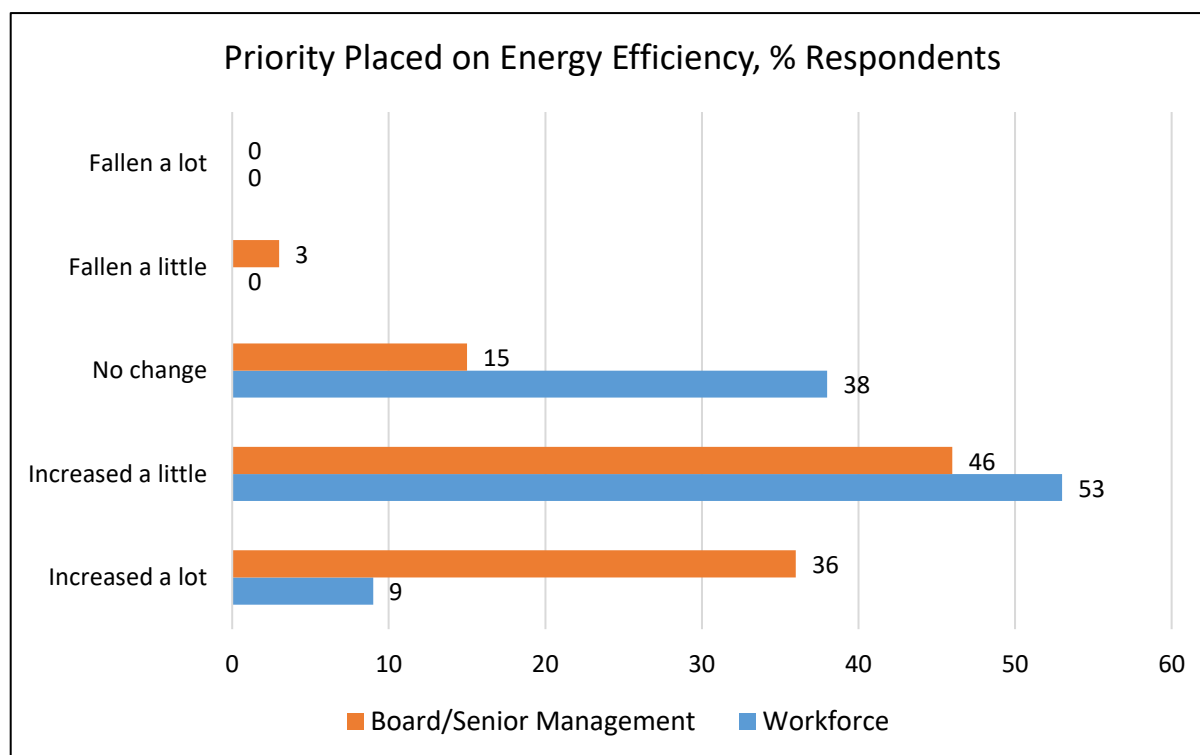
What were the main benefits and impact of the Energy Efficiency Grant you were awarded?



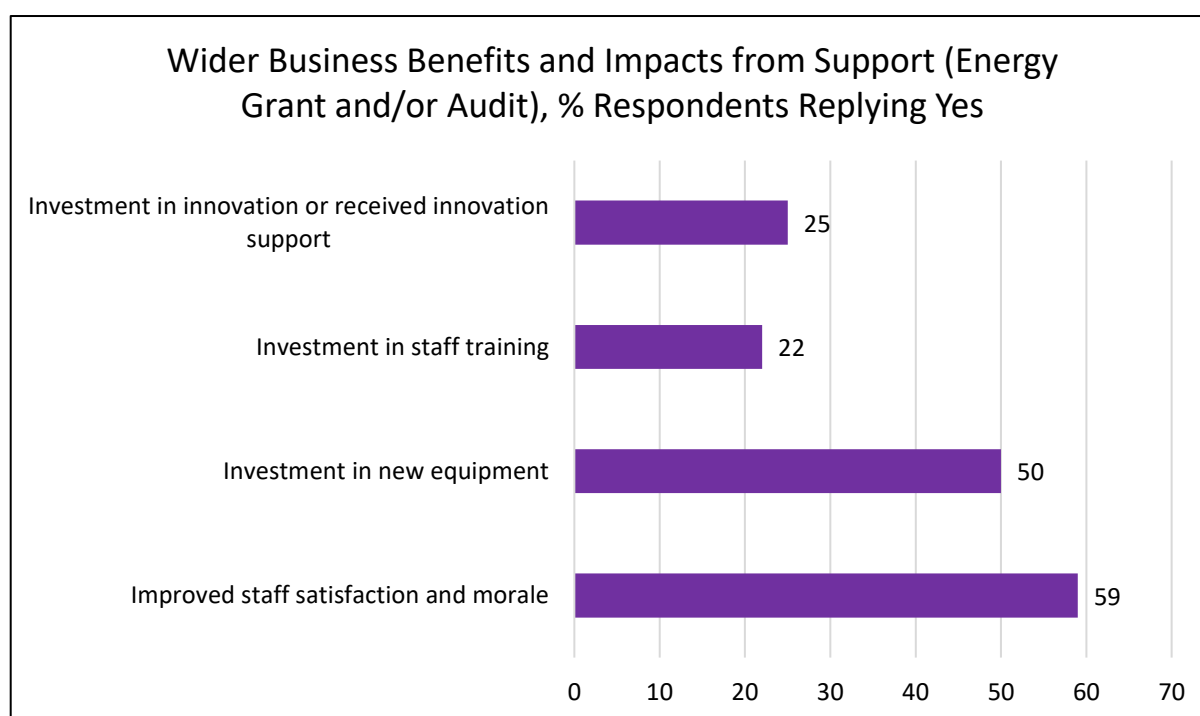
Estimate annual reduction of energy costs for your business arising from support (Energy Grant and/or Energy Audit)

	£ saving pa
High	10,900
Low	1,200
Average	3,900

Changes in the level of priority placed on energy efficiency in the business



Wider business impacts and benefits arising from support (Grant and/or Audit)



Case Studies

Following the survey, in-depth telephone interviews were held with 8 business representatives to provide information which was used to compile case studies, shown in **Appendix B**.

Key Stakeholder Perspectives

Challenges

The key challenge was to provide a route way and a compelling and credible offer of trustworthy energy efficiency advice to gain the trust and enthusiasm on SMEs. There was a degree of uncertainty about the relevance and affordability (in time and money) of support with energy efficiency amongst some owner-managers. Some held the perception that what was on offer was probably more suitable to larger companies.

Getting the project out to market proved a key challenge with inadequate planning and preparation in regard to marketing and promotion following approval. A related challenge was how best to promote an offer which embraced both environmental and economic aims and aspirations.

Sourcing relevant and reliable suppliers, especially local ones, to undertake required works was also challenging, especially early on, because there was an inadequate supply chain and infrastructure within the D2N2 sub-region in particular.

Project Design

The design of the N2EG scheme is widely regarded as one of its key strengths. It is a relatively simple and clear two-stage model and therefore easy for SME owner-managers and staff to understand and buy into. Simplicity was a key attribute.

N2EG energy audits are the first step towards energy-efficiency improvements. They can help firms to assess their energy consumption, understand the potential for energy savings and suggest measures (investments or behavioural changes) to improve energy performance. Their objective is to provide tailor-made recommendations and help to overcome the information gap that is one of the main barriers to energy-efficiency investments.

The offer of free up-front diagnostics and advice via the energy audit was a key selling point. It wasn't something many SMEs had access to, was effectively customised to their needs and circumstances, resulted in a tangible output (a report with recommendations) and it was free of charge. It helped many businesses to understand the potential benefits of taking action to improve energy efficiency in a tangible way and to help them in doing so.

The project also helped to build business trust and credibility in the N2EG delivery team (Energy Services and Economic Development) based in Nottingham City Council. And finally, it also helped ensure grants were allocated properly and businesses were committed to the projects they had chosen to pursue in stage two.

It was noted that it can sometimes be challenging working with SMEs since they don't always have sufficient time to engage in projects like this. And of course there was also the impact of Covid-19. But the N2EG customer journey was kept relatively straight-forward and delivery processes were kept as flexible as possible.

Engagement, Delivery and Performance

Overall performance has been very good with output targets over-achieved and almost all the allocated budget spent. The project extension of six months undoubtedly provided more leeway than had originally been the case however. In retrospect, the profiling of spend and outputs in the early stages of the project (the first year) was overly optimistic and unrealistic.

Improving energy efficiency in buildings proved to be a key driver for many businesses with some also highlighting the scope for business improvement in terms of productivity. Most businesses were driven by the opportunity to achieve cost savings and some also by sustainability and concerns over the environment and climate change.

The project was not widely regarded as one which directly assisted firms to overcome barriers to business growth, especially in terms of employment and revenue growth, at least in the short term. The Business Growth Hub could have been more actively engaged in the N2EG project from the outset and there were very few referrals throughout. To some extent this may reflect the impression that N2EG is more about promoting business efficiency and productivity than facilitating business growth per se. In addition, the onset of Covid-19 did place significant burdens on the Business Growth Hub team as an array of new business support projects and schemes came on stream.

Initially the N2EG approach to marketing used the Growth Hub as the main channel to promote the project to SMEs across Nottingham and Nottinghamshire. This was reflected in the lack of a dedicated marketing resource attached to the project. However, this approach proved not to be sufficient. The adoption of an approach that used more marketing channels proved to be more effective. N2EG was fortunate to be able to utilise the services of the Marketing and Communications Lead in Economic Development, although only on an ad-hoc basis.

Though limited it proved moderately effective, eventually enabling the project to be promoted through Nottingham City Council's social media and print communication channels. Additional promotion through third party events and sector intermediaries also proved effective. ARC will build on this learning developed through N2EG. A re-boot of marketing and networking activity (especially via the Energy Services team) also helped to kick start take-up and the value of the scheme also started to be spread amongst SMEs via 'word of mouth'.

There were some issues in relation to accessing required information to enable projects to be appraised (eg energy bills/ consumption and tariff rates) which caused delays and obtaining quotes and finding suitable suppliers was sometimes very time-consuming. The grant application process was therefore thoroughly reviewed and simplified to make it more efficient.

An energy audit report was received by each participating business and this was kept succinct, easy to understand and clear about next steps and options. The vast majority of applicants then proceeded to the second implementation stage. Where they did not it tended to be because of the likely/perceived costs involved and/or the long pay-back period ie return on investment. Many projects (eg replacement of boilers or lighting) had a clear payback so cost/affordability was the main issue. The 40% grant provided a clear incentive to progress and complete projects.

The sudden onset of Covid-19, giving rise to significant uncertainty, had a negative impact on both the energy audit and project delivery stages of D2N2 in some instances. Video calls supplanted site visits for the energy audits for a time and these worked quite well. As Covid became more widely established and Government lockdowns began so it had more impact on installation and direct activity. The impact also sometimes depended on the nature of the project/ installation eg solar panel requirements can be based on data that can be collected and analysed without a site visit.

Animating the local supplier base was also an aspiration of N2EG and, although challenging at times, some progress was made in terms of building some new links and relationships and raising awareness of the scheme and SMEs interested in improving energy efficiency amongst local suppliers. Procurement of supply was sometimes challenging however.

Project Management and Administration

Overall, project management was widely regarded as having been very good indeed. During the very early stages of the scheme the Accountable Body Manager had often been absent however. Following his departure, there was a swift and substantial improvement in reporting of spend and outputs.

N2EG was a new and in some ways unique project since it marked one of just a few examples of joint delivery by the City Council's Economic Development and Energy Services teams. Although this partnership worked reasonably well overall there were some challenges arising from commercial pressures, technical and compliance issues and costing of management time within Energy Services.

It was felt that governance arrangements could have been improved. The two internal teams could have worked more effectively together and shared issues and concerns (marketing, management information, purchasing etc). Problems could have been more effectively resolved if there had been a Project Management Group comprising members of both Economic Development, the Growth Hub and the Energy Services team. There would also have been more scope to share good practice on an on-going basis.

A small number of applicants didn't submit the required paperwork in time which caused delays in processing claims and payments. Some businesses were concerned with paperwork and evidence requirements but by no means all. Following feedback from the Energy Projects Assessor several useful modifications were made to administrative and operational aspects of the N2EG model eg application forms, approval processes, contracts and monitoring reports were 'sense-checked' and simplified where appropriate.

4. Lessons Learnt

Application Process

N2EG demonstrated that some businesses need extensive 'handholding' with completing the required forms. In response the team offered sometimes extensive assistance to complete forms including providing examples of 'mocked up' applications. They also adapted an approach where SME enrolment forms and application forms were pre-populated with some business information as the staff member at the applicant SME completing the forms rarely had access to business information such as incorporation details, SIC code and company legal form. The team will continue to hand hold where required in ARC recognising the impact this has on delivery staff capacity.

Project lead in Time

N2EG initially didn't fully appreciate the lead in time required by an SME grant beneficiary. ARC will allow a longer lead in time for projects as well as for the grant application process as delays for installation of energy efficiency measures were not uncommon in N2EG due to factors such as identifying suppliers and procurement, programming the installation of energy efficiency measures while minimising disruption to the operation of the business premises, slowness in submitting accurate and compliant claims.

Carbon Reduction Audits Clearly Set Calculations

The N2EG team quickly learned that businesses did not want long, detailed energy performance audits. Some applicants advised the team that previous reports they had received were too academic and contained too much of what they considered to be superfluous information. They preferred short, concise reports that focused on potential benefits, recommendations for actions they could undertake, and indicative costs and volume of GHGs saved. Reports were therefore kept relatively succinct (no more than 6/7 pages at most). These could then be used with potential suppliers as the basis of a specification for works in stage two. A uniform template for different technologies/types of calculation was developed and proved very useful. The team will continue to provide SMEs with concise and focused carbon reduction audits in ARC.

Procurement

As noted above, many SMEs experienced problems with obtaining quotations for the proposed energy efficiency works - initially three quotes were required for each energy efficiency measure. This sometimes resulted in long delays in submitting an application following the production of an audit report. Recognising the barrier that this sometimes presented, N2EG changed the requirement from three quotes to one quote for goods below a value £24,999. The ARC project will continue this approach to procurement and will only require three quotes for measures over £24,999 (which is compliant with EU procurement rules). SMEs will still be advised to obtain multiple quotes as best practice, but this will no longer be a stipulation for a grant application. This will reduce any delays in moving SMEs through the ARC grant process due to waiting for supplier quotations.

Promote Wider Business Benefits of Carbon Reduction

N2EG focussed on the cost and carbon savings to SMEs resulting from introducing energy efficiency measures. The team learned as the project progressed that businesses were reporting a range of wider benefits which were then promoted to other SMEs and which we will emphasise further through ARC. These additional benefits to include better compliance with health and safety through improved lighting particularly in manufacturing and road haulage businesses, a more comfortable working environment positively impacting on staff retention, increased productivity, and a better impression/marketing benefit for clients and customers.

Marketing

An N2EG marketing plan would have been very helpful. N2EG needed to have a better social media profile, better marketing materials and more coverage in the local media. Business Advisers across D2N2 could have been better informed about what the N2EG offer was and how it sat within the wider business support offer provided via the Growth Hub. These issues have been taken on board with regard to the ARC scheme.

Active Engagement with Businesses

The team learned the value in N2EG of an active relationship between the SME and the Project Manager and Business Energy Adviser, with a clear division of responsibility between the two project staff ensuring that questions from applicants were dealt with by the appropriate person. The Project Manager supported the SME from initial enquiry and enrolment through to project completion and grant claim. The Business Energy Adviser was responsible for the provision of the energy audit and responding to all technical queries and post-installation follow up. This means that the business always knows who to get in touch for questions and follow-up information. Again, this will feature within ARC. This evaluation indicates that energy audits should be seen only as a starting point to identify the energy-efficiency potential of SMEs: the audits must then be complemented by energy-management practices in which the work is done largely by the SMEs themselves in conjunction with external experts.

Peer Support

N2EG did not have a peer support component as such. As the project progressed it became clearer that some businesses would value the chance to share experiences and learning with their peers. Some may have been willing to open up their premises to SMEs to observe the impact of the measures introduced, particularly where smart technologies were involved. While there is no formal provision of networking between grant beneficiaries in ARC the intention is to promote SME learning among beneficiaries through the awareness events, other open events and the production of detailed case studies (subject to Covid-19 restrictions). Networking will be achieved by collaborating on events with the sister SUDS and PA4 projects being delivered in Greater Nottingham by the University of Nottingham and Nottingham Trent University.

Information and Alignment

There were some issues in relation to accessing required information (eg energy bills/ consumption and tariff rates) which caused delays. Perhaps businesses could have alerted them earlier on regarding the required information to undertake and complete the energy audit. As noted earlier, it was important keep the energy audit reports succinct, easy to understand, informative and relevant to the business needs and its operating context.

Potentially businesses could have provided more information about complementary activities such as water usage, waste management, recycling and flow restrictions to reduce carbon emissions. The focus of N2EG was on energy efficiency and carbon emissions but it could have broadened its scope in terms of offering information about related areas. Looked at the broader picture about sustainability. This is being taken on board in the ARB scheme.

There could have been better alignment between N2EG and similar schemes being developed and implemented by Nottingham Trent University and the University of Nottingham. The scope for joint-working under the ARC scheme is currently being explored by the City Council and the two universities.

5. Project Value and Strategic Impact

Project Outputs and Spend

Output performance in relation to the targets specified in the N2EG ESIF application are:

- C1 Number of enterprises receiving support: achieved up to date is 55 against contracted 50.
- C34 Estimated annual decrease of GHG: achieved up to date is 630 tons of carbon saved against 550 GHG contracted.

Total cumulative expenditure to date including this claim (Q1 2021) is £1,190,242 against contracted £1,200,000.

Total grant expenditure (at 31st January 2021) was £355,785.57.

Value for Money

In total 58 grant awards were awarded with a spend value of £355,785.57, with the average grant award therefore being £6,084. One business received 3 grants and another received 2 grants. In total, therefore, 55 businesses were assisted via grant support - the average grant value per business was therefore £6,410.

In both instances the intervention rate (spend per business assisted) is below the £10,000 threshold and therefore suggests good value for money.

The estimated average annual reduction in energy costs associated with N2EG support was £3,900. Given that 55 enterprises received support this equates to annual energy savings of around £215,000. In practice, some energy savings will also occur beyond the first year and, in all probability, for several years. This clearly indicates that the N2EG project represents good value for money.

It is likely that a reduction in their energy use and costs will have improved their bottom line and made them more competitive in the marketplace. Stakeholders, including partners and SMEs involved in the project did consider that the project offered value for money.

Added Value

The N2EG project currently only reports under ERDF requirements yet there is clear indication of wider added value. It was highlighted during our interviews that the monitoring and savings to the businesses was generally considered over a twelve month period. In reality, the true value will continue beyond this time-scale. There is also evidence that businesses who adopt environmental technologies within their organisations see an increase in productivity.

The cost of delivering high quality energy saving advice is significantly higher than that available via N2EG, suggesting that the project has delivered additionality by providing benefits to SMEs who would not otherwise have chosen or could have afforded to pay for such expertise, whether it be the energy audit and/or the energy efficiency grant project.

The research team identified several unintended positive outcomes from N2EG, which are hard to quantify in monetary terms but are proving invaluable to Nottingham City Council colleagues and SME clients. They include increased joint working between the Economic Development and Energy Services teams. But the project hadn't prioritised building new working relationships between SMEs (such as sharing of waste products and joint working on the deployment of low carbon technologies). Nor had there been partnership working with other business energy efficiency projects elsewhere, although an investigation of best practice elsewhere was incorporated in the original ERDF application.

Wider Strategic Impact

The N2EG project aligns well with wider Nottingham City Council aspirations to make the City carbon neutral by 2028. N2EG demonstrates to the business community that the City Council are serious about trying to achieve our climate change/ carbon emissions goals and targets. The scheme therefore lends credibility to the Council's aspirations and targets to reduce carbon emissions and protect the environment as well as to promote improvements in business productivity. Nottingham and D2N2 more broadly suffers from a substantial and long-standing productivity gap with England.

N2EG has been especially useful in demonstrating to businesses that energy efficiency can have positive benefits to the firm in a number of ways eg cost savings, improved efficiency, working environment. The project identified

tangible business benefits and returns on investment as well as broader environmental impacts. It got more businesses on board who may have been doubtful about the financial payback of more efficient energy usage.

As the project unfolded business interest and buy-in grew. Carbon reduction grants were proven to be an effective way of incentivising business behaviour. The project was presented as a 'co-investment' opportunity rather than merely an energy saving grant scheme and this encouraged more commitment from the majority of grant recipients in particular. It also emphasised and demonstrated the wider benefits to the business, workforce and environment.

Learning from the N2EG project will be valuable as the Council's various environmental, energy and business support strategies, plans and programmes are updated going forward.

6. Conclusions

Several findings from this summative assessment point to a relatively successful project that has delivered good value for money:

- In most instances access to support (Grants and/or Audits) led to a higher priority being placed on energy efficiency by company Boards of Directors and senior management and the workforce. The most significant broader business impacts arising from engagement in N2EG have been improved staff satisfaction and morale and increased investment in new energy-saving equipment.
- The estimated average annual reduction in energy costs associated with N2EG support was £3,900 which equates to annual energy savings of around £215,000. Relative to the cost of the project, and given its innovative nature, this clearly suggests N2EG represents good value for money.
- N2EG was recognised by beneficiary SMEs to have been an important contributor to raising their productivity and growth potential.

Animating the local supplier base proved challenging as did dealing with the effects of Covid-19 on business engagement. But perhaps the main short coming of D2N2 was in relation to insufficient marketing and promotion of N2EG, especially during the early stages of the project rollout. A bespoke marketing plan would have been valuable.

Potentially businesses could have provided more information about complementary activities such as water usage, waste management, recycling and flow restrictions to reduce carbon emissions and there could have been better alignment between N2EG and similar schemes being developed and implemented by Nottingham Trent University and the University of Nottingham.

Joint-working between the City Council's Energy Services and Economic Development teams encountered some operational challenges but these were, by and large, resolved successfully. A joint Project Steering Group would have enabled some of these challenges to have been resolved more quickly however and promoted more effective sharing of good practice.

The N2EG delivery model was a key asset. Some energy-efficiency projects apply a top-down approach, leading to a sender- receiver relationship that rarely contributes to any deep learning among the participating SMEs. They are based around giving information, advice and financial support to the SMEs via an external specialist. The firm is in essence a largely a passive recipient of support. This approach imposes the view of external experts as to what measures should be taken and how energy efficiency should be improved. Such a one-size-fits-all approach does not generally work due to the heterogeneous technical structure of companies in different sectors in a local economy or sector. N2EG was different.

N2EG's two-stage model and the approach to delivery (which was collaborative) supported the involvement of SMEs in actively working on energy efficiency in their own organizations, helping them develop the skills and knowledge needed in order to improve energy efficiency. This approach significantly increases the likelihood that energy efficiency becomes embedded in the business.

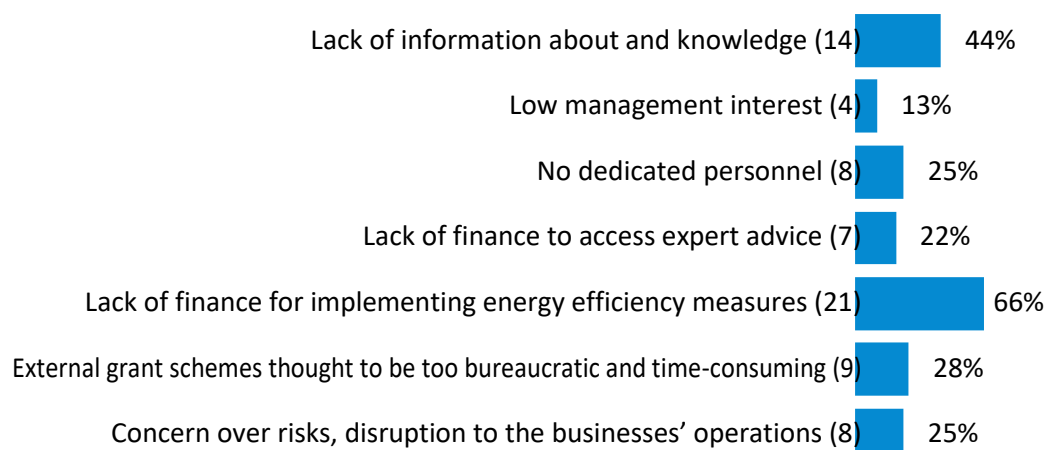
However, there was no network of N2EG SMEs who had implemented action plan recommendations and undertaken projects in stage two of the journey using the energy efficiency grant. The SMEs never came together as a network in peer-to-peer learning and this inhibited the potential for SMEs to share knowledge and experience and therefore learn from one another and not only from external (City Council) experts, as valuable as they undoubtedly were.

These and related matters discussed above may be of value in taking forward the ARC project. Clearly, the situation remains highly uncertain as a consequence of the global pandemic which will undoubtedly have implications for the planning, management and delivery of ARC.

Appendix A: N2EG Business Survey (Detailed Responses)

Overall, there were 35 respondents to the e-survey which was conducted during August 2020. This analysis has been filtered to show the responses for 'All Respondents'. The following charts are restricted to the top 12 codes. Lists are restricted to the most recent 100 rows.

What were the main barriers to improving energy efficiency in your business? (tick any/all that apply)



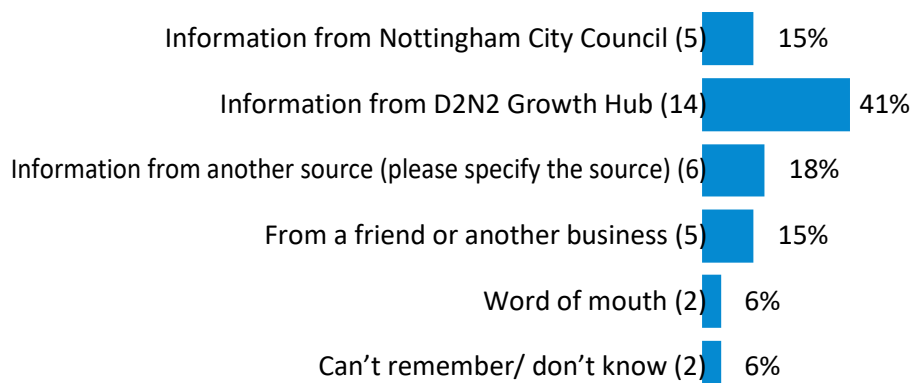
Other (please specify)

NCC are considering selling the building. With that uncertainty it did not make sense to go ahead with the project.

We are a Working Mens Club owned by the Membership. We are run by an elected committee and officials 14 in total. We constantly are looking for ways to improve our Club. Any savings we can make due to our increased efficiency is passed on to the membership in the form of lower prices

we decided to put the project off due to the uncertainty around covid-19 Time frames for installation of the above

How did you first hear about N2EG and the support it could provide to a business like yours? (tick one only)



Other (please specify)

LIGHTING CONTRACTOR TRYING TO SELL LED LIGHTS ON THE BACK OF THE GRANTS AVAILABLE.

Smart Energy called us

Initially through an internet search followed by a phone call

Smart Energy Projects.

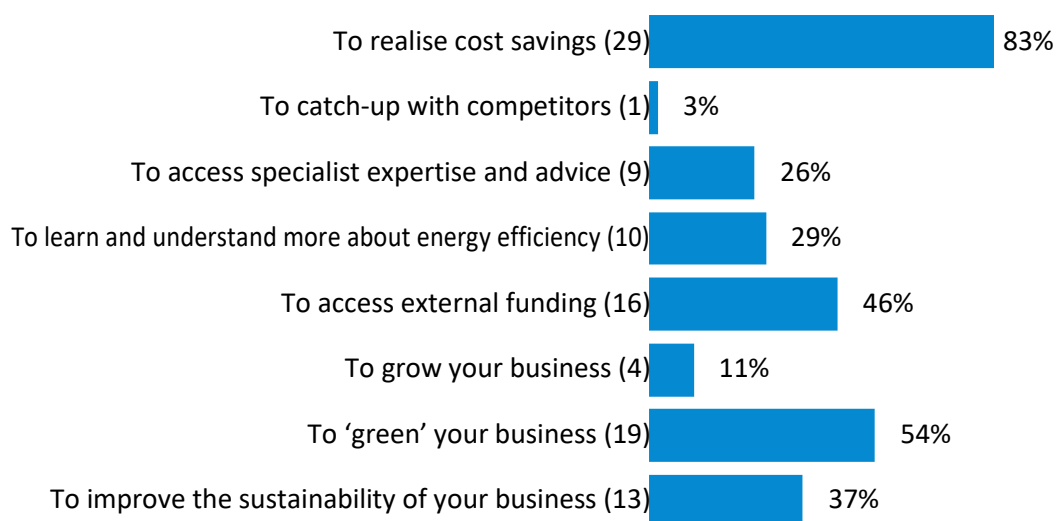
Energy Efficiency event at Oscar and Rosies last summer

External consultant

Contact from Nottingham University.

A company called Carbon Reduction Funding approached our company

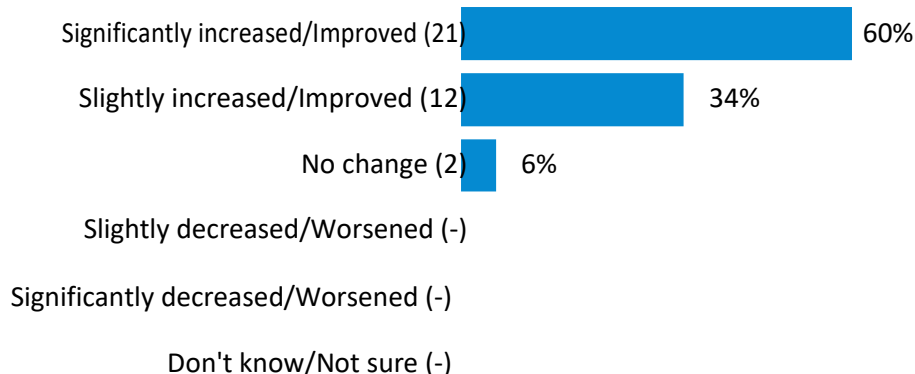
What were the most important reasons for your decision to get involved in N2EG? (tick any/all that apply)



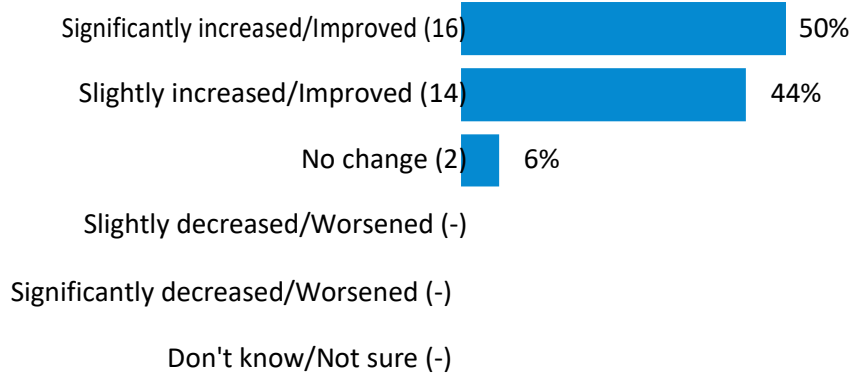
Other (please specify)

To improve on our very out of date oil heating.

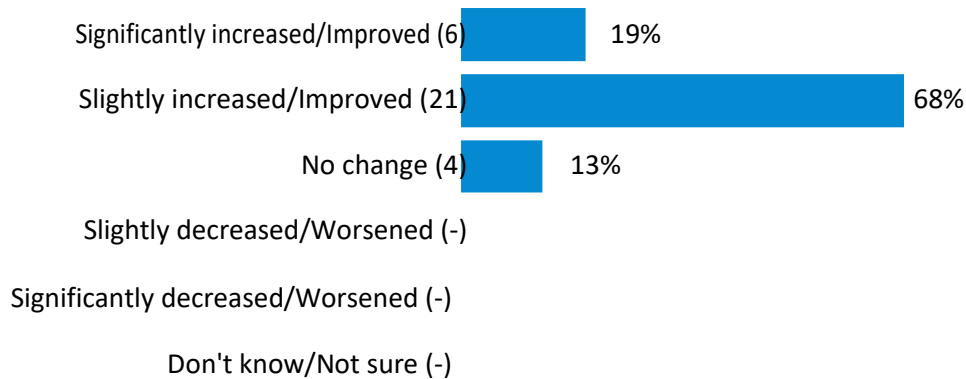
What were the main benefits and impact of the Energy Audit to your business? (Improved awareness of opportunities for improved energy efficiency)



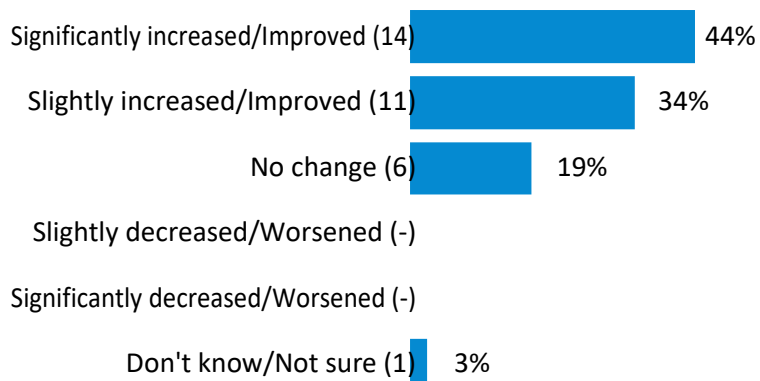
What were the main benefits and impact of the Energy Audit to your business? (Raised awareness of the range of energy efficiency measures you could pursue)



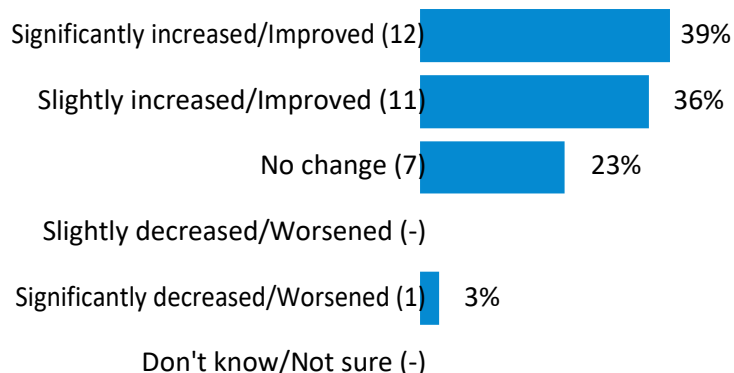
What were the main benefits and impact of the Energy Audit to your business? (Gained insight into good practice in energy use/ saving)



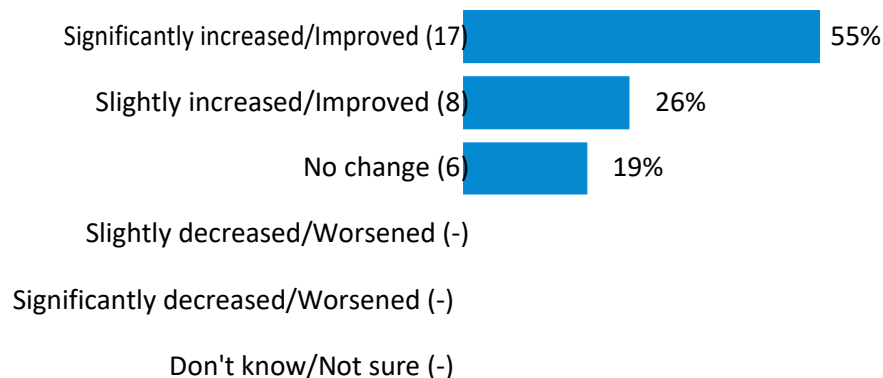
What were the main benefits and impact of the Energy Audit to your business? (Helped you identify energy savings through increased efficiency)



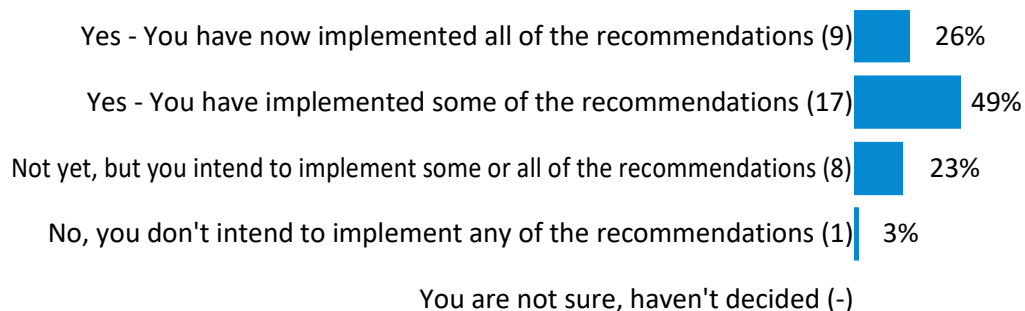
What were the main benefits and impact of the Energy Audit to your business? (Enabled you to bring forward investment in energy efficiency that would have been made later)



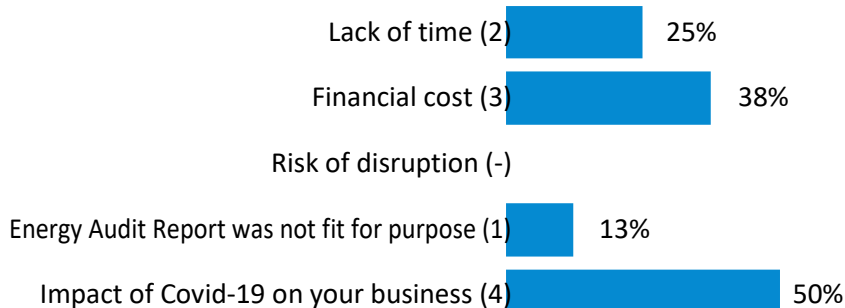
What were the main benefits and impact of the Energy Audit to your business? (Encouraged new investment in energy efficiency that wasn't already planned)



Regarding the Energy Audit report that you received - have you, or do you plan to, implement the recommendations it makes? (tick one only)



You answered "no", "not yet" or "not sure"; why has that been the case? (tick any/all that apply)

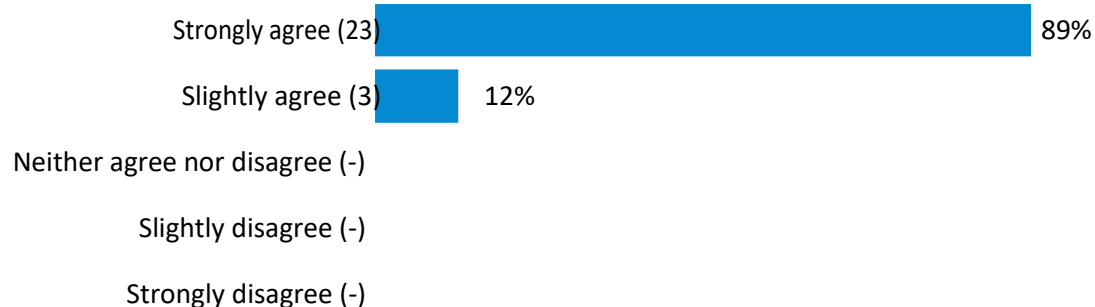


Other (please specify)

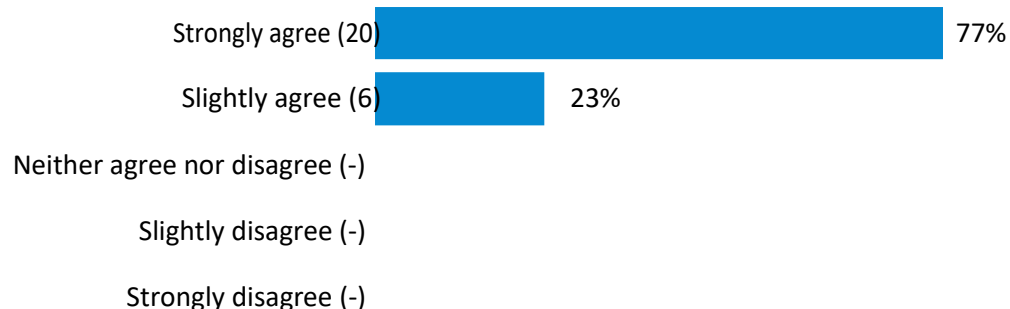
A drawn out process and gave up.

NCC considering selling the building in which we are a tenant

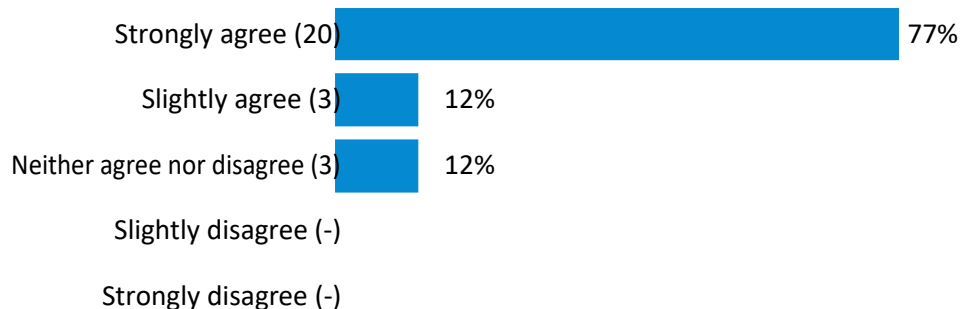
Regarding the Business Energy Adviser you dealt with, would you say they were.. (Knowledgeable about energy efficiency)



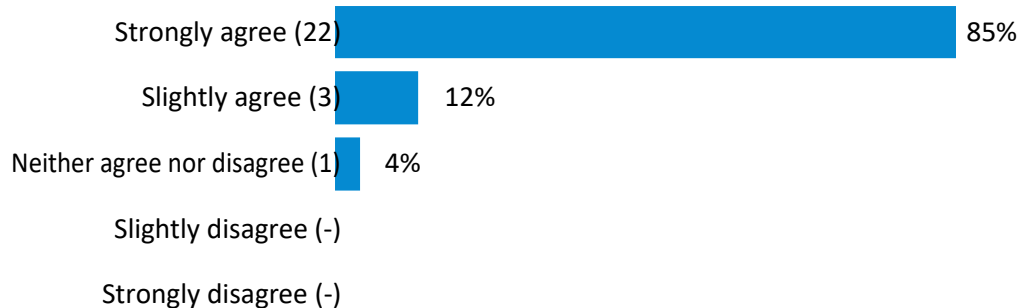
Regarding the Business Energy Adviser you dealt with, would you say they were.. (Understood your priorities and concerns regarding energy usage)



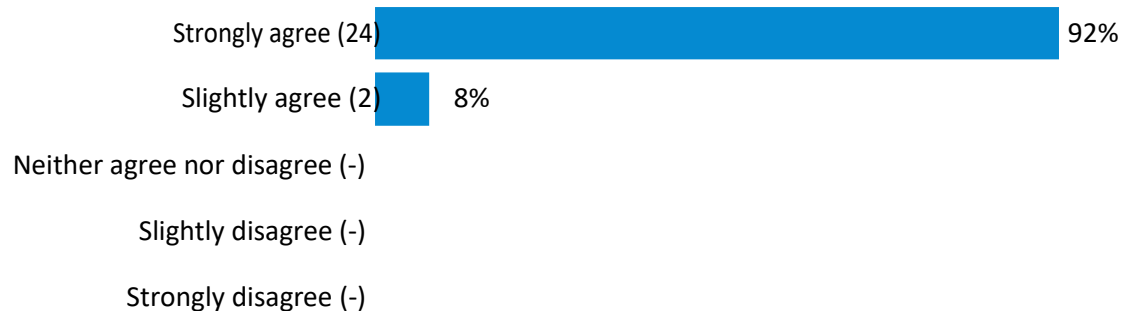
Regarding the Business Energy Adviser you dealt with, would you say they were.. (Listened to your point of view and ideas)



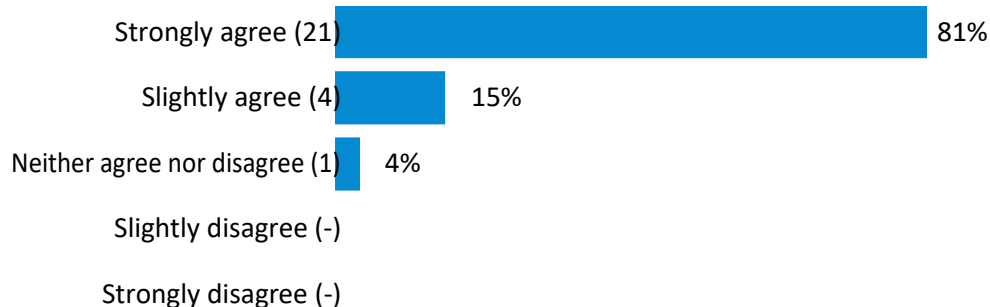
Regarding the Business Energy Adviser you dealt with, would you say they were.. (Offered practical and workable suggestions)



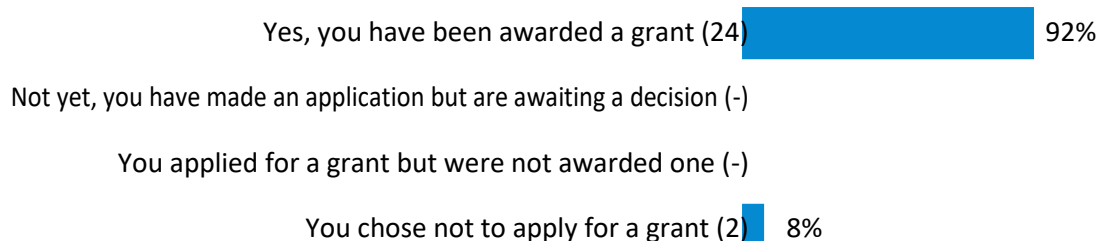
Regarding the Business Energy Adviser you dealt with, would you say they were.. (Helpful and considerate)



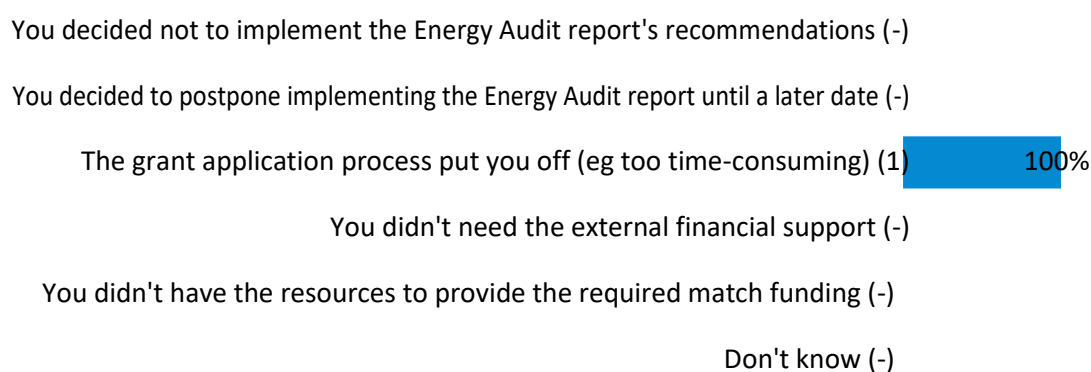
Regarding the Business Energy Adviser you dealt with, would you say they were.. (Communicated in a clear, convenient and timely manner)



Have you been awarded an Energy Efficiency Grant?



What was the main reason(s) you decided not to apply for an Energy Efficiency Grant? (tick any/all that apply)

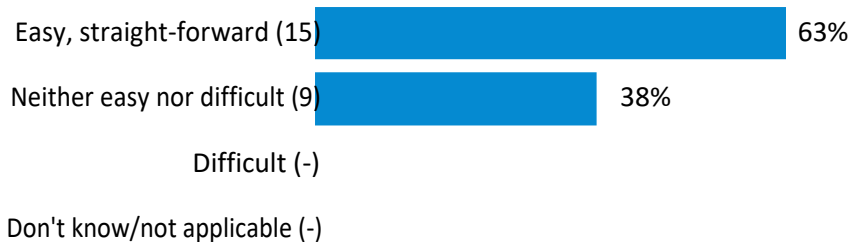


Another reason (please specify)

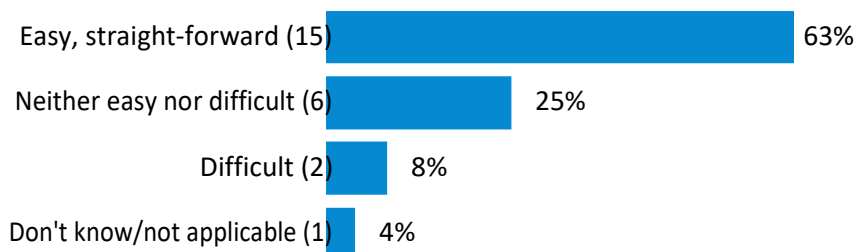
postponed due to covid-19

Needed doing in a certian time frame. Process way to slow so ended up doing it ourselves as we couldn't continue to keep waiting.

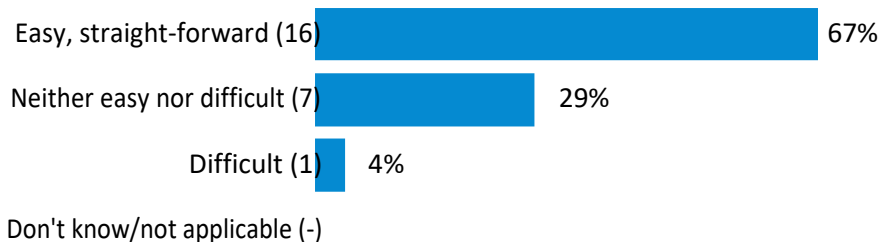
Given that you applied for an Energy Efficiency Grant, how straight-forward did you find the following.. (The application process)



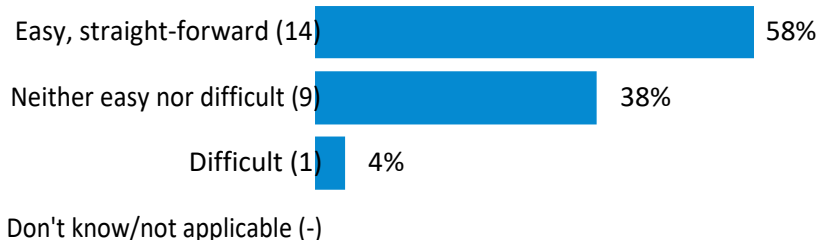
Given that you applied for an Energy Efficiency Grant, how straight-forward did you find the following.. (Finding suppliers)



Given that you applied for an Energy Efficiency Grant, how straight-forward did you find the following.. (The claim process)

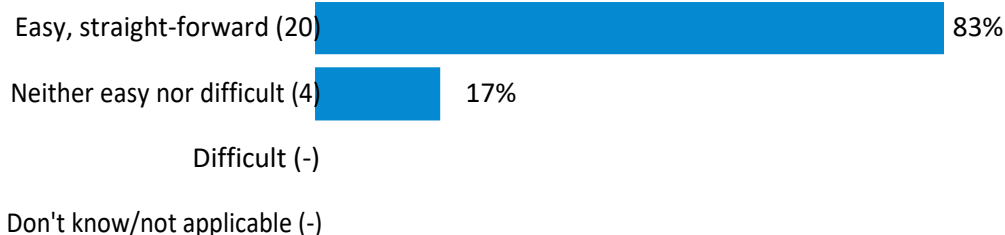


Given that you applied for an Energy Efficiency Grant, how straight-forward did you find the following.. (Completing the required paperwork)

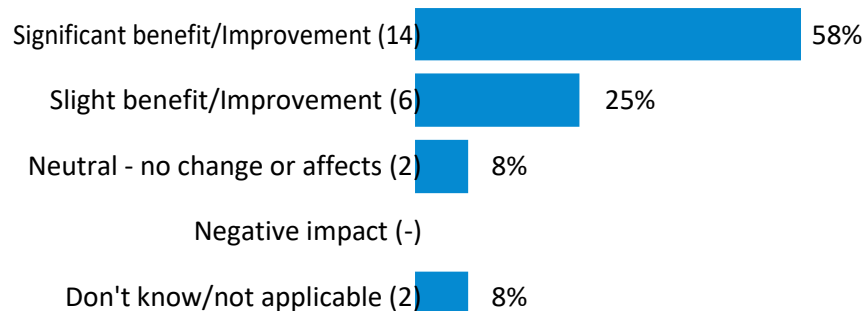


N2EG SUMMATIVE ASSESSMENT

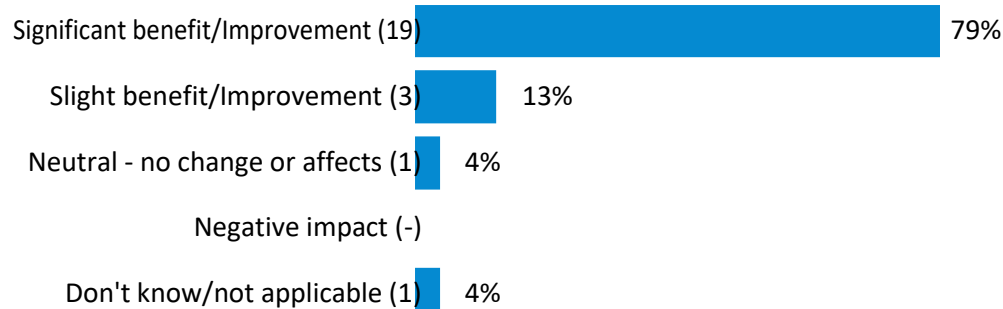
Given that you applied for an Energy Efficiency Grant, how straight-forward did you find the following.. (Getting access to someone to help answer questions or queries you had about the processes and requirements)



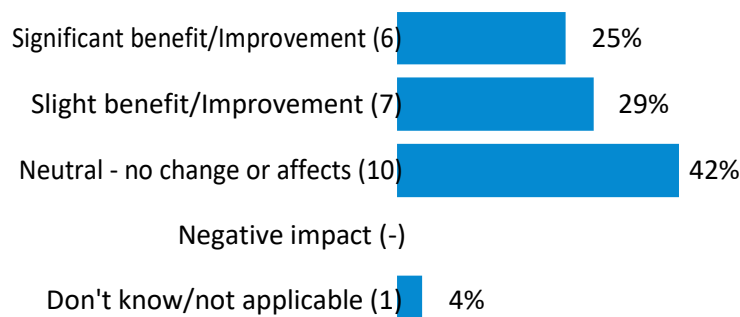
What were the main benefits and impact of the Energy Efficiency Grant you were awarded? (Led to lower greenhouse gas emissions by the business)



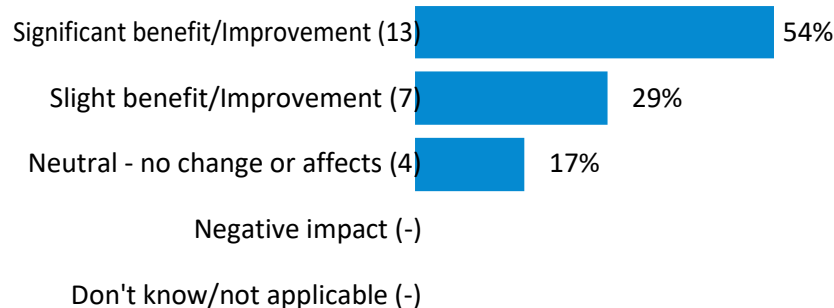
What were the main benefits and impact of the Energy Efficiency Grant you were awarded? (Reduced energy usage and costs)



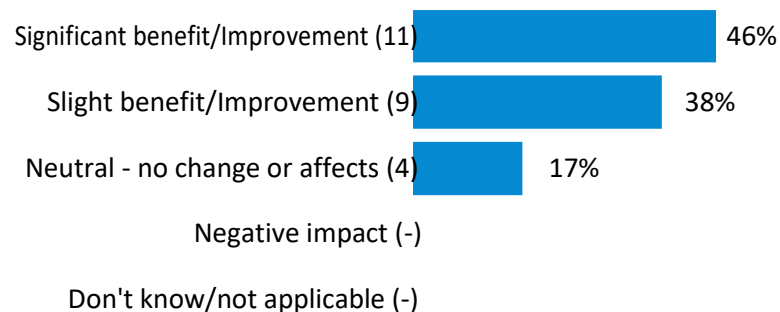
What were the main benefits and impact of the Energy Efficiency Grant you were awarded? (Raised staff awareness about how their working practices impact on energy usage and what they can do to reduce it)



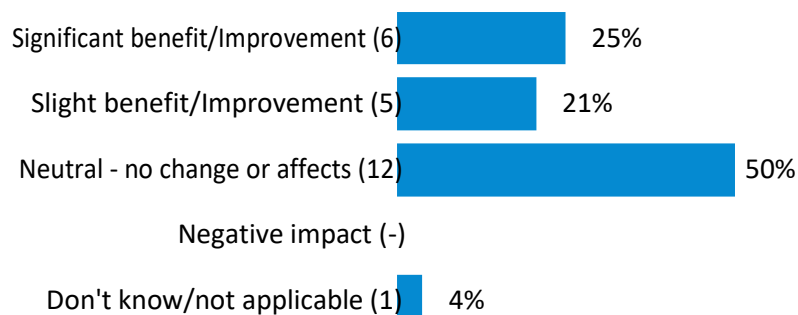
What were the main benefits and impact of the Energy Efficiency Grant you were awarded? (Led to increased investment in energy efficiency)



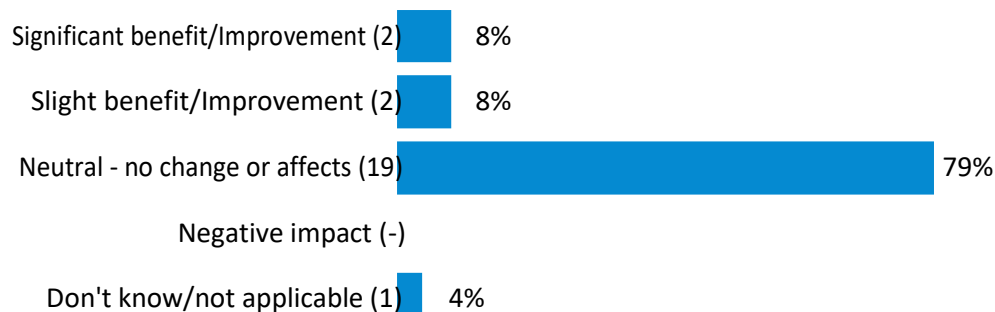
What were the main benefits and impact of the Energy Efficiency Grant you were awarded? (Improved energy performance of premises or production processes)



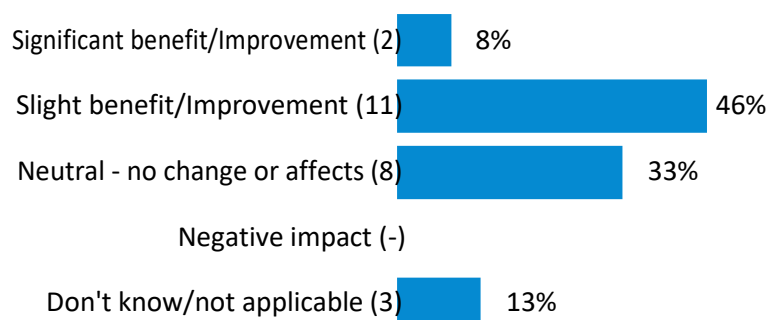
**What were the main benefits and impact of the Energy Efficiency Grant you were awarded?
(Improved workforce efficiency/productivity)**



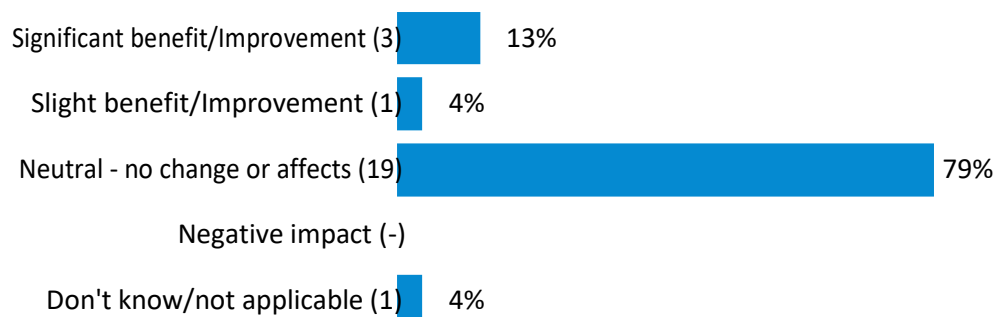
**What were the main benefits and impact of the Energy Efficiency Grant you were awarded?
(Increased sales/turnover)**



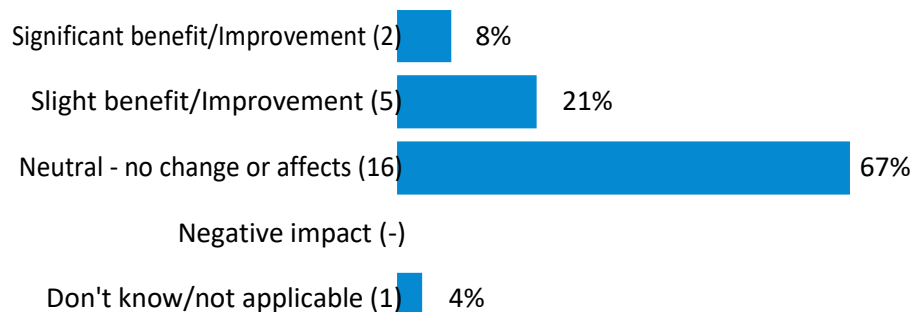
**What were the main benefits and impact of the Energy Efficiency Grant you were awarded?
(Increased profitability)**



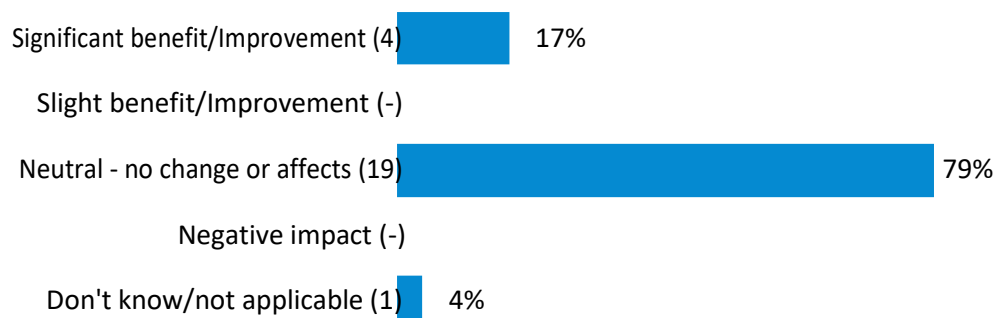
**What were the main benefits and impact of the Energy Efficiency Grant you were awarded?
(Provided a spur to innovation eg new product development)**



**What were the main benefits and impact of the Energy Efficiency Grant you were awarded?
(Improved procurement, purchasing and connection to suppliers)**



**What were the main benefits and impact of the Energy Efficiency Grant you were awarded?
(Improved access to new markets and customers)**



N2EG SUMMATIVE ASSESSMENT

With regard to the support package you have received, can you please estimate the expected annual reduction of energy costs for your business (Annual) (With regard to the support package you have received, can you please estimate the expected reduction of energy costs, in pounds £, for your business (annual))

12,000

£5,000

1200

1200

£1000

To early to tell

3,500

we are not in a position to do this until we start to use the system to heat the building

2000

1998.00

Too complex for me to measure

£1654.00

10900

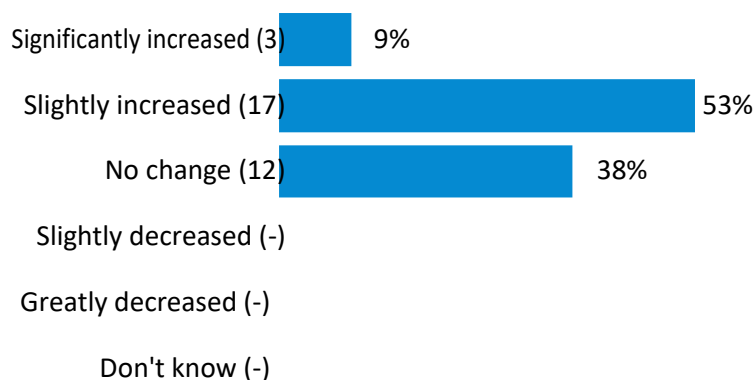
£2000 per year estimated!

£6,166

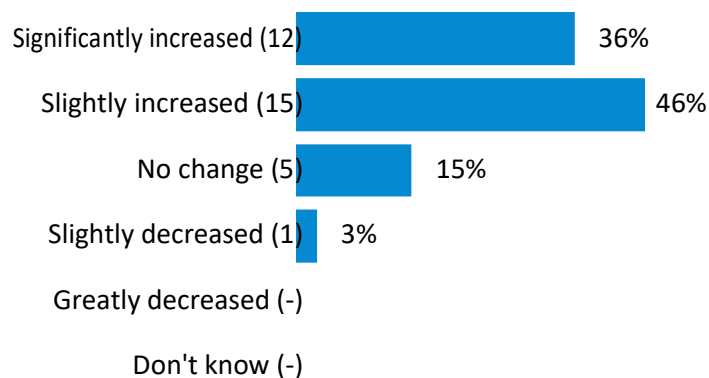
£8000

Currently we are hoping to save between 8 and 10 thousand pounds

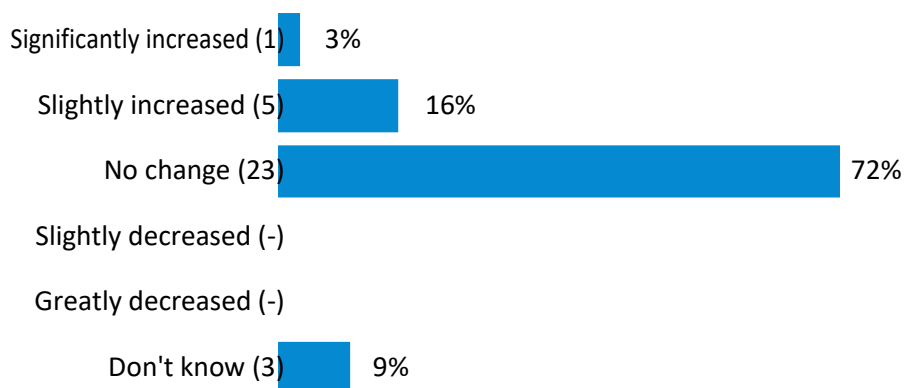
As a result of your businesses involvement in N2EG, how has the level of priority placed on energy efficiency changed? (By your workforce)



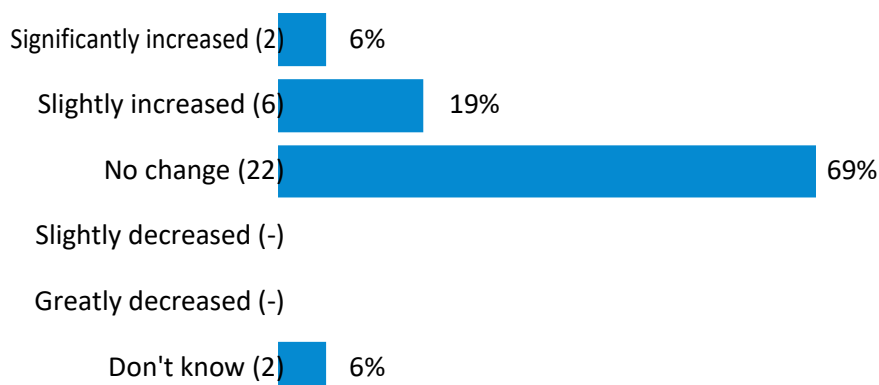
As a result of your business' involvement in N2EG, how has the level of priority placed on energy efficiency changed? (At board/ senior management level)



As a result of your business' involvement in N2EG, how has the level of priority placed on energy efficiency changed? (Amongst your suppliers)

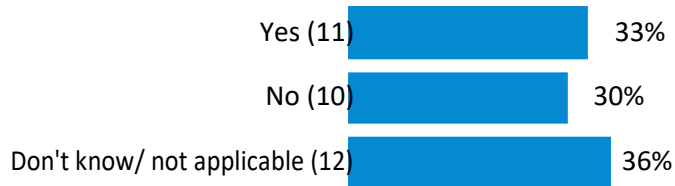


As a result of your business' involvement in N2EG, how has the level of priority placed on energy efficiency changed? (Amongst your customers)

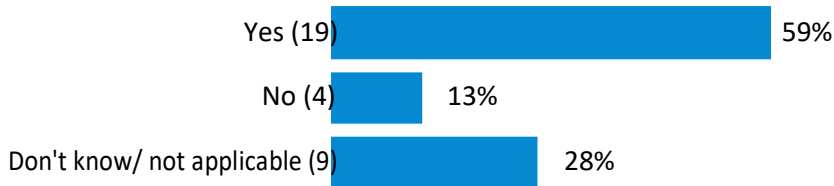


N2EG SUMMATIVE ASSESSMENT

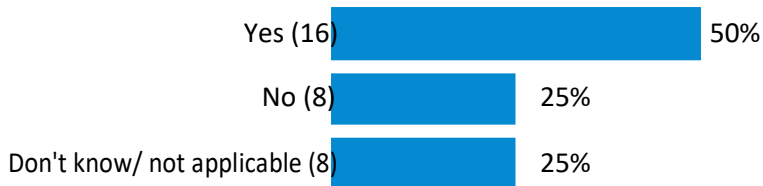
Has the support you received from N2EG led to any of the following wider business impacts and benefits? (Improved reputation and business image/ credibility (reputation))



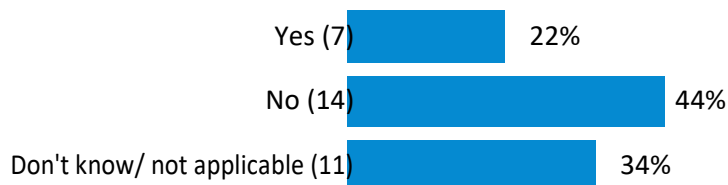
Has the support you received from N2EG led to any of the following wider business impacts and benefits? (Improved staff satisfaction and morale)



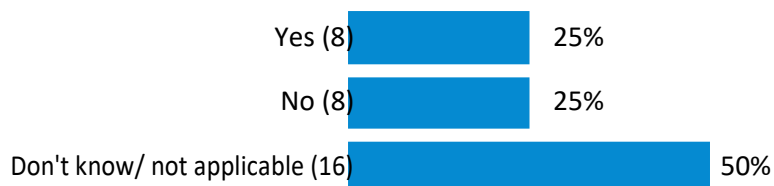
Has the support you received from N2EG led to any of the following wider business impacts and benefits? (Investment in new equipment)



Has the support you received from N2EG led to any of the following wider business impacts and benefits? (Investment in staff training)



Has the support you received from N2EG led to any of the following wider business impacts and benefits? (Investment in innovation or received innovation support)



Other (please specify)

Never told what it could be used for. I proposed lighting done deal but didn't pursue.

Due to our power supply needing to be upgraded to cope with the new equipment, not yet completed, due to covid 19. It hasn't been possible to assess any impact.

Covid has meant results are harder to see, plus its summer. Also barely anyone has been in the office, so won't see benefits maybe till Winter and when hopefully covid is over!.

As a company we manufacture smart monitoring sensors ,during the improvements and alterations to the building we have installed over 250 of our products as an investment , this has enabled us to monitor many aspects of the buildings environment including its energy loss and retention, it has also given us the opportunity to show others who are considering their carbon footprint how easy it is to monitor..

Think about your overall involvement in N2EG from a business perspective (Has it been worthwhile?)



Not applicable (-)

Think about your overall involvement in N2EG from a business perspective (Do you think it will have a lasting impact (of more than a year) on energy performance and efficiency in your business?)



Not applicable (-)

Are there any kinds of help and support that N2EG did not offer but which you would have found helpful in retrospect? Could anything have been done differently and therefore better?

obtaining quotes for energy saving measures on our behalf No

Sorry but don't know what N2EG is about? Do you have any literature No

None Known

No

No, I was quite happy with the support I received throughout the process.

The admin process and how it has to be done and the signing and original forms and all the EU hassle of paperwork could be reduced.

N/A

The overall application procedure was clear, and the advice i received was very helpful, the only difficulty I encountered was how the application required so many cross overs within the company to complete ,many of the pages i was able to fill in on my own while some would require additional information from other departments that slowed the process down. I would of found it beneficial if the information required by other departments such as accounts was separate to the main application.

If you have any general comments/feedback you would like to make about N2EG please do so in the box below.

would be a great scheme if we had the funds available to invest in it

All members involved were very helpful regarding the application which led to it all running smoothly from start to finish even under the difficult circumstances we all faced regarding the Covid pandemic

Great to get support to improve the energy efficiency of one of our buldings

It is a shame we were unable to take up the offer of grant.

I've been well supported throughout the process

Very helpful and flexible team made it a pleasure to deal with

NG2EG None as it all just worked very well.

The personal approach and visits made to our premises and help with the application and admin were excellent.

The staff and surveyors were really helpful and once they demonstrated how much energy and money we could save, we were delighted and wish we had done it a long time ago

Wonderful team, truly an absolute joy to work with. They explained things so well and were happy to walk us through every step of the process.

thanks v much for helping.

Although the grant has enabled us to improve our carbon footprint by installing new energy saving measures it has also made us more aware of how necessary this has become and how little we knew before we started, We are very proud of how we have transformed the way we monitor and use our energy now, and would love to share this with others who might benefit from our experiences. Please feel free to contact us for a case study or a visit with ether yourselves or others.

Appendix B Case studies

1. Innovation Laser, Nottingham



Key Facts

Project cost: £20,721

Grant: £8,288

Estimated Savings: 24 tonnes of CO₂ per year and £18,146.00 per year

Works completed and installer: Upgrading lighting to LEDs, replacing air compressor, welding extractors and press brake.

Background

Innovation Laser is a family owned and run metal fabricators; they are growing rapidly and are proposing new employment for up to twenty people in the coming year. Their operational building is approximately 40 years old, of cavity wall construction, there was no evidence of retrospective insulation, the roof spaced have no insulation, and the windows are single glazed in wooden frames. Heating in the offices is provide from an Ideal Mexico 2 domestic style boiler, with the workshop heated by a 300kWh gas air heater with thermostat. The lighting was mainly high wattage fitting, such as fluorescent tubes and halogens. The workshop housed a number of heavy-duty equipment such as, compressors and press brakes.

The Challenge

Innovation Laser contacted N2EG for assistance with determining how to reduce energy consumption from the building but also their operations. Innovation Laser were aware that the machinery used as part of their operations were leading to considerable amounts of energy and could be reduced through investing in new machines.

The Solution

Following a site visit, it was advised to replace all existing fluorescent and tungsten lighting to LED fittings. This offered significant savings, particularly in the workshop, where replacing the existing high wattage halogen fitting with LEDs could offer almost 50% savings. In addition, following completion of additional testing of some of the machinery, it was recommended that the existing compressor, welding extractors and press brake be replaced with new units.

The Outcome

Based on the above energy efficiency measures it is projected that Innovation will reduce their energy usage by around 95,240kWh per annum. This would lead to a reduction in carbon dioxide emissions of approximately 24 tonnes and annual operating savings of £18,146.

2. BACKLIT, Nottingham



Key Facts

Project cost: £30,855.33

Grant: £12902.29

Estimated Savings: 11 tonnes of CO₂ per year and £14,000 per year

Works completed: Upgrading lighting to LEDs, upgrade gas boiler with new high efficiency unit and extend connection to remove use of electric panel heaters on other floor. Replace electric panel heaters, with two gas air heaters in the basement.

Background

BACKLIT is an independent art gallery and studios located in the heart of Nottingham. They support a diverse range of people and groups, from local community and heritage engaged projects to individually developing creatives. Their operational building covers three-storeys, built early 1900's of solid brick construction and containing no insulation. The windows are single glazed in wooden frames. Heating on one floor of the building is provided by a Glow-Worm Hide Away gas boiler, which was in need of replacement and running at extremely low efficiencies. The remaining areas of the building were heated through plug-in electric panel heaters. The lighting was inefficient tube and compact fluorescents.

The Challenge

Backlit contacted N2EG for assistance with devising a way to provide fixed, affordable heating systems to all floors of the building. The top and basement floors did not contain pipework to supply wet radiators; in addition, the basement floor was a large open space, which was not suitable for radiators. As well as upgrading the heating system, the inefficient lighting systems were high consumption fittings and did not provide adequate lighting efficacies to allow the space to be used as the gallery space it was intended to be.

The Solution

Following a site visit, it was proposed to replace all existing tube and compact fluorescent lighting to LED fittings. This offered significant savings, as well as increasing the lighting quality for both staff, artists and visitors. After a number of suggestions, it was decided that the heating system would be split into two sections; the top two floors would be heated via a high efficiency gas-condensing boiler, including all necessary pipework, radiators and controls. With the basement being heated by two modulating gas air heaters as these perform much better in large open spaces.

The Outcome

Based on the above energy efficiency measures it is projected that Backlit will reduce their energy usage by around 31,000 kWh per annum. This will lead to a reduction in carbon dioxide emissions of approximately 11 tonnes and annual operating savings of £14,000.

3. Sunny Accountants, Sutton in Ashfield, Nottinghamshire



Key Facts

Project cost: £14,898

Grant: £5,959

Estimated Savings: 8 tonnes of CO₂ per year and £3k per year

Works completed and installer: Gas fired condensing combination boiler installed, cavity walls injection filled with blown bead insulation and loft insulation upgraded to 270mm.

Background

Sunny Accountants is a family owned and run business offering a range of financial services to businesses and private individuals. The building Sunny Accountants operates from is a 1950's domestic style cavity brick and brick construction with pitched, tiled roof. The property was heated through electric panel heaters with timers and thermostatic controls, with hot water supplied by Zip Aquapoint unvented water heaters where required. Efforts were already in place to reduce consumption by changing the lighting to LED, with plans already in place to upgrade the remaining fittings.

The Challenge

Sunny Accountants were interested in reducing the energy consumption associated with heating the property, in order to reduce running costs as well as provide staff with comfortable working conditions.

The Solution

Following a site visit, it was proposed to install a new gas fired condensing combination boiler with all required radiators and controls, as well as upgrading the external thermal efficiency of the property by retrospectively insulating the cavity walls through injecting blown bead insulation and increasing the loft insulation to 270mm.

The Outcome

It is projected that, by completing the above works, Sunny Accountants could reduce their usage of gas and electricity by around 42,871.90 kWh per year. This would lead to a reduction in carbon dioxide emissions of approximately 8 tonnes and operating costs of £3k per year.