The Royal Academy of Engineering

BIS | Department for Business Innovation & Skills

Business motivations for engaging the public in science and engineering

September 2011

The Royal Academy of Engineering

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Acknowledgements

1. Introduction

The *Science for All* expert group was established by the Department for Business, Innovation and Skills (BIS) in 2009 in response to the government's consultation on Science and Society. In Spring 2010, the group published a report[1] and action plan to work towards a healthy relationship between the sciences and society. The report identifies the need to build on approaches developed in recent years to engage the public with science and engineering and lays out a roadmap for all science-related organisations, Government and other groups to take action.

Three critical areas were identified against which a set of detailed and specific actions points were given:

• A wider understanding of why, when and how the public engages with the sciences.

• Supportive networks and mechanisms for increasing effective engagement.

• A professional culture that values, recognises and supports public engagement with the sciences.

The *Science for All* group's shared vision for public engagement outlined in its report is:

Of all sections of society valuing the sciences and their methods as creative and empowering ways to ask questions, offer solutions and contribute to our understanding and improvement of the world we live.

Although there is still work to do in this area, public engagement activities and infrastructure within academic communities was reasonably well understood by the *Science for All* expert group. However, the expert group noted that knowledge of public engagement within the private sector was lacking. It was also acknowledged that to build capacity for public engagement with science, technology, engineering and maths in the UK, there needed to be a better understanding of what kind of activities are currently undertaken by the private sector and why.

To address this, The Royal Academy of Engineering (the Academy) partnered with BIS to commission a research project to understand the motivations and rewards for, and barriers to, public engagement within science, technology, engineering and mathematics based businesses.

The report aims to provide the wider science and engineering communication and public engagement community with a resource that will enable them to develop more fruitful relationships and partnerships with the business community.

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1 *Science For All*: Report and action plan from the Science For All Expert Group, BIS, 2010
http://interactive.bis.gov.uk/scienceandsociety/science-for-all

2. Summary of the findings

For the purposes of this piece of research, 'public engagement' was understood in its broadest sense and included a wide range of different activities: public debates, consultations, customer engagement, end-user engagement, Corporate Social Responsibility (CSR), public dialogue forums, citizen juries, consensus conferences; public attitudes research; educational and outreach activities.

The research comprised both a quantitative and qualitative stage:

A survey: 426 online interviews (3% response) conducted during November and December 2010 with employees of science, technology, engineering and maths based industries whose role, or part of their role, related in some way to engaging the public within their businesses or organisation.

In depth interviews: 16 face to face or telephone interviews with businesses exploring issues raised in the survey in more depth. Interviews were conducted during December 2010 and January 2011. This aspect of the research explored the reasons and the barriers for engaging with the public; the different types of engagement that companies undertook; and their motivations for doing so.

Business advisory group: The advisory group consisted of 10 representatives from different sectors and different sized companies. The purpose of the group was to provide a business perspective to the key aspects of the project by providing comments and advice on business contacts, the methodology, research tools and the draft and final reports.

Stakeholder consultation: The final draft version of this report was also sent to an additional nine individuals, that included those that took part in the interviews and others from the public engagement community. The comments from this consultation exercise have been incorporated into the final version of the report.

The results show that the way to build public engagement capacity with business is to focus on **purpose rather than process**. The idea of framing any discussion around public engagement is likely to be ineffective: businesses will respond to specific and distinct projects that meet their business objectives. As such, any strategy to engage business needs to think in terms of educational goals, policy effectiveness, social outcomes and how these align to business goals and motivations. The process to achieve this will follow from understanding those needs.

The public engagement landscape

Overall, the term public engagement had little resonance with the businesses participating in this research, describing their activities as: communications, Corporate Social Responsibility (CSR), marketing, public affairs, public outreach, public relations, social investment, and stakeholder outreach. Where businesses used **the term** 'public engagement', this was generally in relation to a formal consultation with the local population such as where a business wished to build a new facility or expand an existing one and required planning consent. Few businesses considered that they undertook any of their engagement

activities with the 'general public', generally targeting their activities towards schools, further and higher education, final year students and graduates, stakeholders, government and the media.

Small businesses tended to be much less involved, if at all, in any activities with the public, partly because of a lack of resources and partly because they defer to either larger companies or their trade bodies to undertake such activities. A couple of businesses in the research study had no contact with the public, selling directly to other businesses (as a sub contractor) or to the military and they felt it was therefore inappropriate to engage with the public.

Motivations and barriers to engaging with the public
Businesses only undertook engagement activities with a clear purpose in mind. These purposes were predominantly internal to the business and expressed in terms of a specific need.

Internal business motivations included the need to:

- address a problem with a local community (for instance a local planning issue)

- support recruitment and attract the best talent into the sector

- increase sales through marketing activities

- improve image and reputation.

Larger, global businesses felt a need to improve and maintain positive public and stakeholder perceptions for brand purposes. Often they had a corporate desire to *"be the best"* and to show leadership in terms of sector wide issues.

External motivations for undertaking engagement activities tended to focus on inspiring young people to become interested in science and engineering in addition to improving the talent pool and skills of the next generation (these were often discussed in relation to recruitment). In turn, these actions were seen as contributing to helping to solve some of the world's future problems.

The reward to the business of public engagement of any kind was in helping recruit the best employees and in recruiting from the local area. The reward from engaging in outreach with schools or more CSR type of activities was the effect on staff morale, development of skills and opportunities.

Although motivations were primarily corporate, there were also individual motivations for participating in public engagement activities. These fell into three distinct areas: increase public awareness and understanding of science; a desire to give back to the community for the opportunities that individuals had been given; and personal profile raising, either within their own company or the sector generally.

The main reasons reported for not participating in public engagement activities were six fold:

- No business need.

- A perception that their business was not relevant to the public.

- Financial cost and time, which was especially relevant for the smaller business.

- General concern about how any activity would be received by the audience due to cynicism behind the reasons for engagement or distrust of science and scientists.

- Fears about attracting unwanted attention especially if working in controversial areas.

- Confidentiality and the risk of competitors finding out too much about the business.

Experiences of public engagement
Although over 400 business responded, this was only 3% of the total number invited to take part. **Care therefore must be taken when interpreting the results and whether this reflects the true level of public engagement across all businesses.**

More popular engagement activities tended to be around the marketing and promotion of the organisation. Four overlapping areas of public engagement were more prominent across businesses:

- Outreach with schools and young people

- Local outreach

- Presenting or public relations

- Using intermediaries.

Specific engagement activities and projects were less likely to follow a strategy but instead they developed 'organically' and were often initiated from the outside of the business.

Desire for further public engagement
Many of the businesses responding to the study that were already very involved in public engagement activities thought it was unlikely that they would want to do more, although they were open to hearing about new opportunities.

Businesses that were not taking part in any activities stressed that there would need to be a clear financial benefit to engage; a lack of resources and time was a key issue to their participation. Those that operated in controversial areas of the sector were keen to keep a low profile and be involved only through an umbrella group or intermediary.

Businesses that were interested in undertaking public engagement activities or becoming further involved tended to focus on two areas:

- educational outreach activities to **inspire young people** in the science, technology, engineering and mathematics industries and to create a positive reputation for the company more generally; and

- **promoting and reinvigorating specific industries** in the UK – manufacturing, design and engineering in particular were felt to have a poor public image.

Strategy and recommendations to encourage and build capacity for public engagement within the private sector

- Businesses have a clear purpose for engaging various audiences and we recommend that the design of any strategy developed by the *Science for All* group should be looking at this purpose and **aligning with this business need.**

- We strongly advocate **not using language such as 'public engagement' and 'STEM'[2]** when communicating with businesses. Public engagement as a term is misleading. The activities which sit within this term are so varied and straddle across departments, individuals and strategies in larger businesses. More relevant language would be 'CSR', 'local outreach' and / or specific areas or audiences such as 'work with young people'. Furthermore, not all businesses identify with the 'STEM' acronym. Their allegiance often lies with their specific industry sector, for example, engineering or manufacturing. We recommend therefore that any initiatives, communications and networks to build capacity in business public engagement should take this into account.

- Across all types and sizes of businesses, there are wide-ranging business, personal and external reasons for undertaking **outreach work with schools and young people**. Therefore, businesses are likely to be receptive to messages about working with young people and education. We recommend that this is taken into account when designing any business engagement strategy. The message strategy could include the benefits to the business of raising their reputation, helping with recruitment and contributing to staff morale.

- Networks involving regular events may be more useful for the smaller business but the challenge will be in helping the business to justify the time investment. A way around this may be to provide useful hooks for small businesses such as general business and marketing advice.

- Due to the 'organic' nature of much current engagement work being undertaken, thought could be given to the idea of **how to encourage the public to approach businesses** as well as the other way around to achieve the policy goals around science, technology, engineering and mathematics. An idea for how this could be achieved could be in targeting specific groups such as young people, parents or teachers with specific guidance and career advice such as, how best to arrange work experience with businesses.

2 Science, Technology, Engineering and Mathematics

3. Background and methodology

3.1 The definition of 'public engagement'

For the purposes of this piece of research, 'public engagement' was understood in its broadest sense and included a wide range of different public engagement activities: public debates, consultations, customer engagement, end-user engagement, CSR, public dialogue forums, citizen juries, consensus conferences; public attitudes research; educational and outreach activities.

More specifically, these activities were grouped into three types as detailed in the 'Public Engagement Triangle'.[3] These are:

• Transmit
• Receive
• Collaborate

This tool aided the design and structure of the survey recruitment process and the interviews.

The tool was designed to articulate the three key purposes for engaging with the public. It is intended to be used by 'engagement protagonists and intermediaries' in conversation with those that they are supporting, liaising, convincing, funding, evaluating, inspiring and commissioning in the field of public engagement from an organisational point of view.

Figure 1: Public Engagement Triangle

To inspire, inform, change, educate, build capacity and involve or influence decisions of others (eg the public)
TRANSMIT

To use the views, skills, experience, knowledge of others (eg the public) to inspire, inform, change, educate or build your own capacity or decisions
RECEIVE

To collaborate, consider, create or decide something together
COLLABORATE

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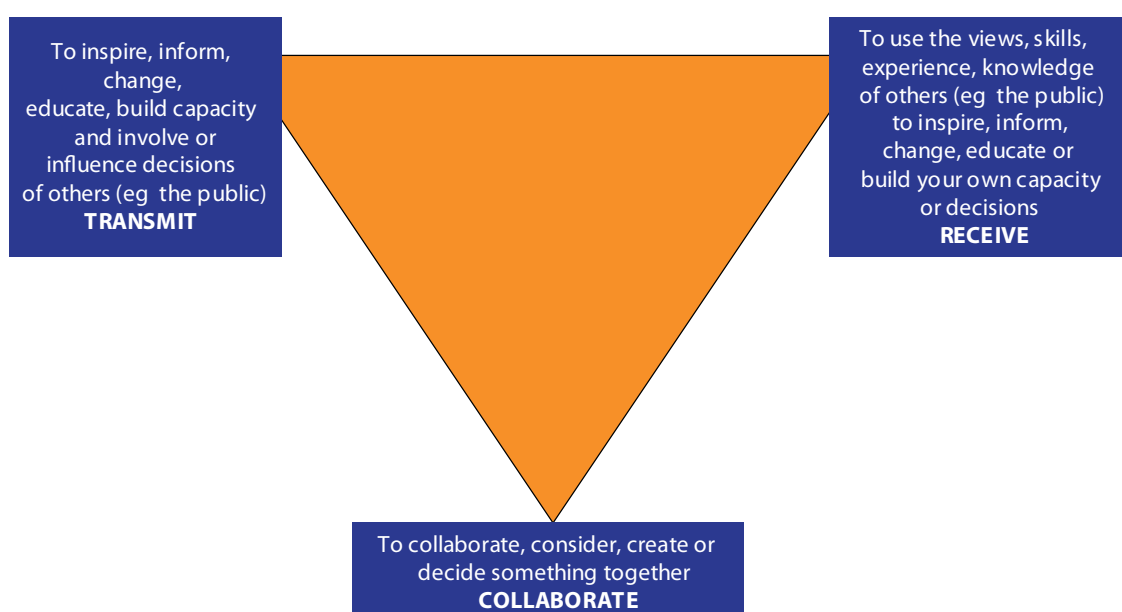
3 The Public Engagement Triangle - a conversational tool. Developed by Lindsey Colbourne in August 2010 on behalf of the *Science for All* expert group. http://interactive.bis.gov.uk/scienceandsociety/science-for-all

3.2 Research objectives

The overall aim of the research was to build a greater understanding of the public engagement motivations, rewards and barriers for science and engineering based businesses and to consider how to build capacity in this area. More specifically to:

- understand the sector's **attitude** towards public engagement and the language they use to define this.

- understand the **level of importance** attached to public engagement in a business / how embedded is it within the organisation and how is this achieved.

- explore what has and does motivate businesses to engage the public – what are the **rewards** (for individuals within a business and the business) and why.

- understand the **barriers** to undertaking public engagement.

- explore the **types of public engagement** undertaken and experiences in terms of what is perceived as successful and unsuccessful.

- ascertain the **appetite** for further public engagement activities.

- ascertain what businesses perceive to be the ways to develop and increase their public engagement activities and how best to **encourage other businesses** to engage with the public more.

3.3 Methodology

The study comprised an online quantitative survey that was used to map how science and engineering based businesses were engaging with the public and to quantify a number of key measures, such as the techniques employed and the degree to which different terminologies are used to describe the engagement process.

Following the survey, a qualitative study was conducted with a wide range of businesses, including those that did and did not engage with the public. This was used to explore in detail the reasons for engaging with the public, as well as the barriers. In addition, this part of the research explored the different types of engagement that companies undertook and their motivations for doing so.

3.3.1 Quantitative research

The survey consisted of 426 online interviews (3% response rate) conducted between the 9th November and the 2nd December 2010. Respondents were employees whose role, or part of the role, related to public engagement within their business / organisation. The sample of businesses surveyed was diverse and included various sectors such as agriculture, food and drink, pharmaceutical, energy, manufacturing, finance and design. It also covered businesses / organisations of different sizes:

- 1-10 employees: 134 respondents

- 11-49 employees: 70 respondents

- 50 - 199 employees: 161 respondents

- 200 or more employees: 50 respondents

Email invitations were sent to senior members of staff within 12,829 organisations with instructions on how to take part. Businesses were selected based on the industry sector (as defined by SIC[4]) in which they operated. A list of relevant sectors was agreed with the Academy and BIS prior to selection.

A degree of disproportionate sampling was employed to maximise the number of larger businesses (100+ employees) in the sample frame and to ensure that the views of employees working in a wide range of science and engineering based industries were included in the survey.

Survey data were weighted at the end of fieldwork to correct for disproportionate sampling and to ensure the survey findings were as representative as possible of the relevant science, technology, engineering and mathematics industries.

The response rate achieved was circa 3%. Of that 3% (439 respondents), approximately half (234 respondents) of organisations were happy to be re-contacted and involved in further research. Generally analysis of the survey data is limited to the 'topline' level focusing on responses from all respondents. Where comparisons are made between sub-groups this is largely for indicative purposes and should not be regarded as statistically valid.

Key findings are presented throughout this report.

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4 SIC – Standard Industry Classification. The United Kingdom Standard Industrial Classification of Economic Activities (SIC) is used to classify business establishments and other standard units by the type of economic activity in which they are engaged. It provides a framework for the collection, tabulation, presentation and analysis of data and its use promotes uniformity. In addition, it can be used for administrative purposes and by non-government bodies as a convenient way of classifying industrial activities into a common structure.

3.3.2 Qualitative research

Sixteen interviews were undertaken with businesses over the period December 2010 to January 2011. Ten of these were sampled directly from the survey respondents, a further six were sourced from the business advisory group and from contacts provided by the *Science for All* expert group. Interviews were conducted face to face, each lasting around an hour; the remainder were conducted by telephone, each lasting around thirty minutes. The sample profile is provided below.

Businesses were selected to represent a mix of size, sector type and their survey responses with regards to the amount and type of engagement activities undertaken. These were classified into three broad headings based on the Public Engagement Triangle:

- **Transmitting** types of activities – promotion, presenting, educational and schools outreach and running competitions open to the public.

- **Listening** types of activity – running or attending public meetings, market research.

- **Collaboration** types of activities – co produced research with the public.

The interviews were structured using a topic guide (see appendix) and digitally recorded for analysis purposes. Using detailed notes taken from the recorded interviews an in-depth thematic analysis was undertaken and forms the basis of this report.

Table 1: In-depth interviews sample profile of organisations

	Desire to do more PE*	No. of employees	Type of public engagement activity	Area
1	Not interested	1-5	Transmitting – Education	Engineering
2	Not interested	6-10	Transmitting – Promotion	Science
3	Not interested	50-99	Transmitting – Presenting	Engineering
4	Not interested	100-199	None	Engineering
5	Not interested	11-49	Transmitting – Education	Science
6	Fairly interested	200+	Transmitting, listening and collaboration	Technology and science
7	Fairly interested	50-99	Transmitting and collaborating	Science
8	Fairly interested	50-99	Transmitting, listening and collaboration	Engineering
9	Fairly interested	200+	Transmitting, listening and collaboration	Science, Technology, Engineering & Mathematics
10	Very interested	200+	Transmitting, listening and collaboration	Mathematics
11	Very / fairly	200+	Transmitting, listening and collaboration	Science
12	Very / fairly	200+	Transmitting and listening	Science
13	Very / fairly	200+	Transmitting and listening	Engineering
14	Very / fairly	200+	Mainly Transmitting	Engineering
15	Very / fairly	200+	Transmitting, listening and collaboration	Technology / Mathematics
16	Very / fairly	200+	Transmitting	Science

*PE- public engagement

3.4 Report structure

Following the introductory and methodology chapters the report comprises a further 5 chapters:

- Chapter 4 considers the public engagement landscape, the nature of science, technology, engineering and mathematics businesses' engagement activities and the language used to describe them.

- Chapter 5 explores the motivations and barriers to engaging the public.

- Chapter 6 explores businesses' experiences of engaging with the public.

- Chapter 7 considers whether businesses want to undertake further engagement activities.

- Chapter 8 discusses strategies for encouraging science, technology, engineering and mathematics businesses to engage with the public.

4. The public engagement landscape

This chapter considers the concept of public engagement from the perspective of businesses, their familiarity and understanding of the term 'public engagement' and the role that it plays within their business.

4.1 What do businesses understand by 'public engagement'?

Overall, the term public engagement had little resonance with the businesses participating in this research. Use and awareness of the term was generally low and its relevance was limited to those businesses that engaged specific groups rather than the general public. More likely, businesses described their activities as:

- communications

- Corporate Social Responsibility (CSR)

- marketing

- public affairs

- public outreach

- public relations

- social investment

- stakeholder outreach.

These terms not only tended to be used to describe their activities, but also the name of the department within the business for which the respondent worked.

"I struggle to understand exactly what that [public engagement] means… it's a very wide open thing…. who is the public?"
(Not interested[5], 1-5 employees)

"If you asked people within the company they would associate that term with me but they would find it quite nebulous."
(Fairly interested, 200+ employees)

Where businesses used the term 'public engagement', this was generally in relation to a formal consultation with the local population. Typically, this might be where a business wishes to build a new facility or expand an existing one and the business engages in a formal consultation with the local public.

"There is a formality to that. If we are developing a new facility, such as a recycling centre or an incinerator, the planning system ensures an element of public engagement which we will have to go through to satisfy the planners."
(Fairly interested, 200+employees)

5 Quotas defined as 'Not interested', 'Fairly interested' and 'Very interested' in business / organisation is interested in becoming (more) involved in public engagement activities

Throughout the discussions with businesses it was apparent that where public engagement of this type was undertaken it was an infrequent and minority activity. Marketing and communications or outreach in the form of CSR were the key activities undertaken with the public.

4.2 Who are 'the public'?

As noted above, businesses distinguished between different audiences for their activities. Certain businesses considered that they did not undertake any of their communications activities with the 'general public' unless they had decided to focus on promoting their business to the **local community**.

Local community activities ('public outreach') were usually undertaken for one of three reasons:

- Businesses might sponsor a local activity as a means of **generally raising, or maintaining, the profile of their brand**. Equally, they might provide speakers for local talks. While these were generally open to the public, the audience tended to be very specialist. For example, one international aviation company gives occasional local talks that are open to the public; in practice however, the audience tends to be members of the public with specific aviation interests, industry professionals or ex-professionals, and occasionally lobby groups.

- Business also indicated that by meshing themselves in the local community, **if a problem arose it could be dealt with quickly** and usually without escalation.

- To contribute to **meeting their corporate social responsibilities**.

Without exception, **businesses indicated that their activities were almost always highly focussed on different audiences**, and for very solid and articulated business reasons. For example:

- schools – to raise the profile of a specific discipline and encourage young people to take an interest in science, technology, engineering and mathematics subjects

- further and higher education – to understand the needs of educational institutions and to help further and higher education establishments understand the needs of business

- final year students and graduates – as part of their recruitment process

- stakeholders

- government

- media – usually as a means of raising their business profile

This will be discussed further in the next chapters.

4.3 The focus of public engagement activities

Engagement activity was rarely driven by the desire to discuss or promote science, technology, engineering or mathematics, but more with raising the profile of their business.

Those working in controversial sciences had a keen interest in working with other organisations to gain societal acceptance over specific technologies. They referred to the need to *"generate a climate that promotes a licence to sell"*. They were therefore having conversations with specific groups (often politicians) to inform policy.

Some larger businesses in particular felt a responsibility to take a leadership role in promoting their industry. As such, they felt a need to inspire and educate various groups in either science or technology. They talked in terms of 'transmitting information' rather than engagement being a two way process of talking and listening.

Smaller businesses recognised the need to promote and invigorate their own industry (especially engineering and manufacturing) but preferred to defer this responsibility to the larger businesses or trade bodies to achieve this. If they undertook any activities it was likely to be classic marketing, promoting their products and services. By way of example, a micro-brewery gave tours to the public, essentially as a way of marketing their products.

5. General motivations and barriers

Although the term public engagement had little resonance for businesses, other than for public consultations, certain organisations engaged in a wide range of activities with different segments of the public. This chapter explores the motivations for engaging with the public as well as the barriers to doing so. The range of issues are summarised in Figure 2 below:

Figure 2: Motivations and barriers towards public engagement activities
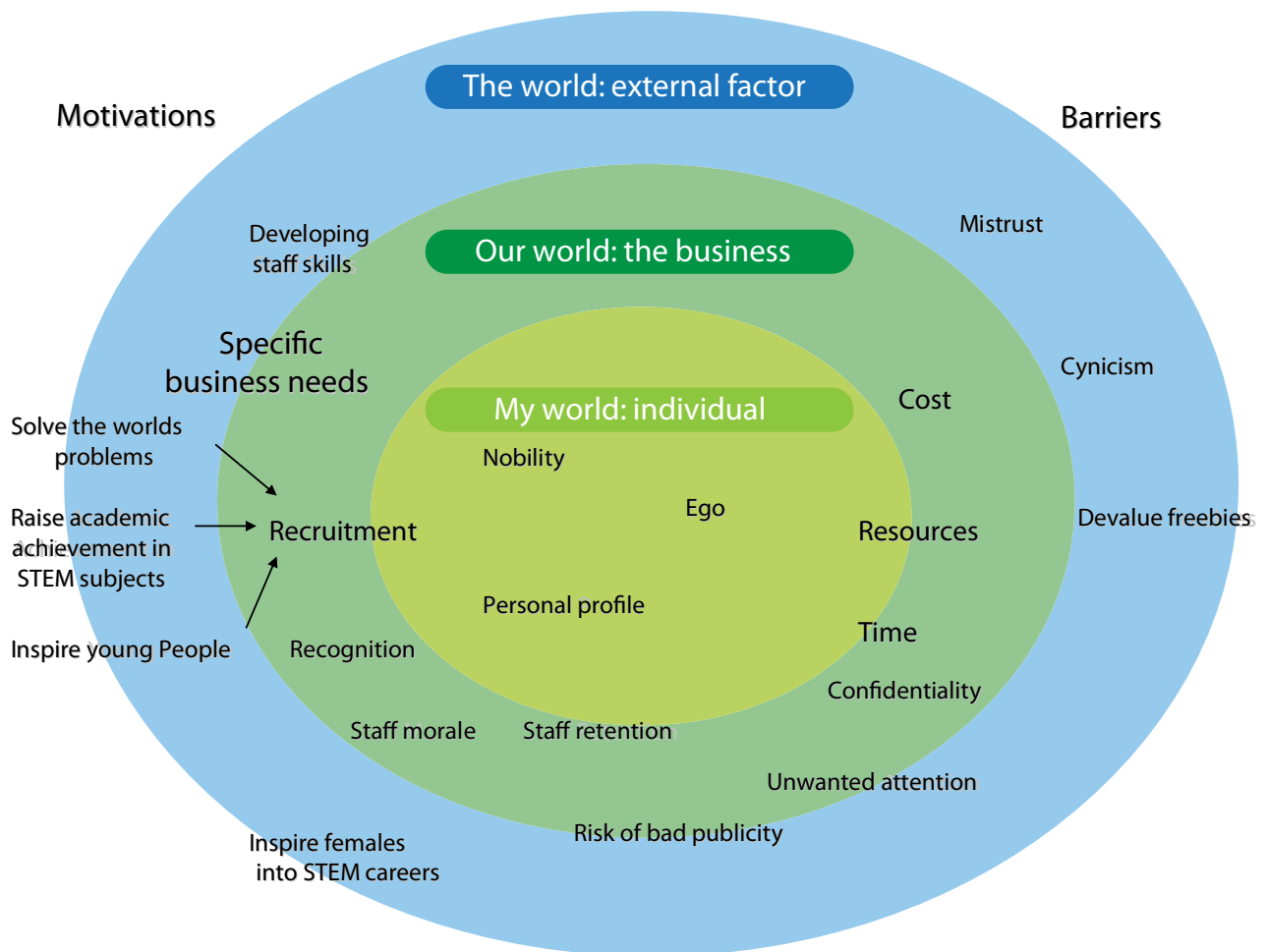
Figure 2 is a diagrammatic representation of the general motivations and barriers that arose from the qualitative interviews and maps these according to whether they relate to the individual, the organisation or the community as a whole. Of greatest influence were those motivations and barriers at the organisational level (both in number of motivations and barriers and the importance of these – shown through size of text). The model clearly demonstrates that the individual, the business and the external community all have an influence. The general motivations and barriers are discussed further in this chapter along with the priority assigned to them.

5.1 Motivations for engaging with the public

Figure 3 shows the motivations and figure 4 (in section 5.2) shows the barriers.

Figure 3: Motivations for engaging with the public – findings from the online survey

Q: What would you say are the main reasons for your business/ organisation being involved in these types of activities? / what prompted you to start doing these things?[6]

Reason	%
To promote your organisation or sector	59
To increase sales of products or services of your organisation	59
To develop better products and services	35
To improve perceptions of your organisation or sector	33
To inspire and educate young people	33
To have a positive impact on the communities in which you operate	25
To help recruit the future workforce for your sector or organisation	22
For professional development of staff in terms of communication skills	20
As part of your commitment to Corporate Social Responsibility	19
To build/ improve community relations	18
As a form of market research	17
To gather public attitudes and views to inform decision making	10
In order to trial ideas or products amongst a critical test community	8
To better manage situations that might be controversial to the wider public	7
Other – please specify	6

Base: All whose organisation / business is ever involved (330)

The survey indicated that the top five reasons for engaging with the public were to:

- promote the organisation, or the sector

- increase product sales

- develop products and services

- improve perceptions of the organisation or sector

- inspire and educate young people.

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6 The survey allowed for multiple responses.

Exploring the motivations for engaging with the public in more detail in the qualitative research **it is clear that activities are largely driven by business needs**, either at the global or local level, although there are some powerful individual and personal factors that may come in to play.

5.1.1 Business reasons for engaging with the public
Typically, larger companies had corporate plans that included some element of engaging with the public. These may be short-term, one year plans, or longer-term. The larger, international, businesses also tended to have a global focus. Ad hoc activities tended to be confined to issues such as:

- shaping policy and informing debate, over a specific scientific issue

- damage limitation, where something untoward had occurred at a local level

- a more formal engagement of the public in response to a planning application.

At the **local level**, outreach and CSR activities such as assisting educational programmes in local schools, local public displays, sponsorship and local talks were designed to raise the profile of the business as a *"good, local employer"* as well as maintaining a positive profile of the business in preparation for any potential negative publicity that might arise from the nature of their business.

As the survey indicated, much of the public engagement activity had a strong sales and marketing element. At the national level, businesses were very keen to promote and improve perceptions of their organisation, especially those selling directly to the public and those not working in the more controversial sciences.

Larger, global businesses were keen to **raise their reputation and improve staff motivation**, as well as public and stakeholder perceptions. Often they had a corporate desire to show leadership in their outreach work or PR and to shine and *"be the best"*. One large business referred to the importance of their score on the CSR index.

Larger, more global businesses were very forward looking in wanting to improve the talent pool and the skills of the **next generation of engineers and scientists**. There were good business reasons for doing this – to continue the flow of high calibre talent into their business, as well as the contractor and sub-contractor businesses that they worked with extensively. They also referred to the end result of this in terms of helping to make better products and technology in order to help solve the world's problems. Other businesses referred to recruitment in the context of their local area and the importance of promoting themselves and the work they do in order to attract potential recruits.

Businesses talked about the rewards of engagement work on the **morale of staff** and the opportunities for them in being able to work with the community and to do different types of activities from their day job. This was seen as both a bonus for staff and a way to help **develop new skills** that may be useful to the business.

"People feel more confident about their company if they do good stuff."
(Over 200+ employees)

"The people who did the Big Bang get two days off work and get to talk about chemistry to people who are interested rather than sitting in a lab."
(Over 200+ employees)

"We put our young designers working in schools and doing PR work…its good for their careers – they learn how to run a meeting or to give a talk – they can practice their public speaking in front of people."
(Fairly interested, 50-99 employees)

5.1.2 Individual reasons for engaging with the public

Although business motivations were a higher priority, it was also clear that some respondents in the research had their own individual motivations and reasons for engaging with the public beyond a core business need. These fell into three distinct areas:

- **Personal nobility**: a personal motivation to inspire, promote or educate. For some, this was related to their role as a scientist. One CEO working in pre clinical contract research described his desire and duty to *"demystify science and de bunk the accumulated myths"*

- **Altruism**: a desire to 'give back' to the community for the opportunities that they had been given. A managing director of a small sheet metal work factory described his desire to offer work experience and apprenticeship opportunities in return for the opportunities he had been given when younger:

  "I've always felt socially responsible to give young lads a chance. I've trained up quite a few people and that's because I was given the opportunity when I was a young lad."
  (Not interested, 1-5 employees)

- **Personal profile raising**: respondents indicated that staff (and themselves) used engagement activities to raise their profile, sometime within their own company, sometimes within the sector generally.

  "Both X and I enjoy having a personal profile… its very satisfying… it's your 15 minutes of fame and all that."
  (Fairly interested, 50-99 employees)

6. Barriers to public engagement

Figure 4: Barriers to engaging with the public – why not currently / regularly engaging

Q: You said your business / organisation [never / only infrequently] does these types of activities... Which of the following best describes why this is?[7]

Barrier	%
Our work / business is not relevant to the public	47
Our work/ business is not relevant to STEM	41
We are too small to support this type of activity	40
Time – it takes too long	20
Cost – it is too expensive	19
Too resource intensive	18
Our work / business is confidential	17
Lack of interest among the public	8
Do not know how to get involved	7
Lack of interest within the company to do this type of thing	6
Too difficult to organize	6
It is being done adequately by others and so we do not see a need to get involved	4
We do not believe we can make a difference	4
Our work/ business is controversial	2
Some other reason (specify)	6

Base: All whose organisation / business is never involved / involved only infrequently

The survey indicated that the top four reasons for not engaging with the public were:

• the work they undertook was not seen as relevant to the public

• their business was not seen as relevant to the science, technology, engineering and mathematics sector (although the STEM acronym was not always understood in the qualitative research)

• lack of resources (size of the business; lack of time and perceived coss needed to engage)

• confidentiality issues.

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7 The survey allowed for multiple responses.

The businesses that **did not** engage with the public tended to be either small or working in controversial science areas or practices. Overall, the main factor was there was no perceived business reason to engage with the public: often working in companies that neither sold goods to the public or that undertook work that was considered to have broader social consequences. None of these respondents had any individual objection to engaging with the public *in principle*.

In addition, smaller businesses in particular referred to the **financial cost and time** of getting involved in public engagement. For many working in small businesses they (for example, the Managing Director) were needed on a day to day basis to run the business and were already working long hours. The **current financial climate** was seen as a further barrier to them in justifying taking time out. However, many were aware that they needed to be focusing their efforts in marketing to maintain and grow their business.

> *"It's a disruption to the day… it can take two peoples time up for an afternoon when you have school children that you are showing round."*
> (Not interested, 11-49 employees)

> *"We are only a small business and most of our time is taken up with just running it."*
> (Not interested, 6-10 employees)

> *"I'm out of my comfort zone… to put myself out there is new to me really. I've relied on doing business for the same customers and with a recession coming on I need to branch out and learn how to advertise myself."*
> (Not interested, 1-5 employees)

Lack of relevance either to involving the public or to science, technology, engineering and mathematics were further reasons given for why businesses did not wish to invest in public engagement activities. Those not working with or selling to the public did not perceive the public to be interested in their business.

> *"I've been racking my brains to think of a reason to do it [public engagement] since the survey…. I can't think of any."*
> (Not interested, 100-199 employees)

The **perception that their work / business was not relevant to the public was strong** with 47% of respondents citing that as a reason for never or infrequently engaging the public. This is surprisingly high and could be underestimating the potential public interest and social impact, even if indirect (for example, business to business). It could be argued that all businesses are ultimately funded (directly or indirectly) by the public through the purchase of goods and services.

Many talked about their fears in attracting **unwanted attention** especially if working in controversial sciences or areas. In these cases there was a tendency to join other companies and provide an industry viewpoint rather than attract individual company attention. Both smaller and larger businesses were fearful about certain groups of the public becoming too engaged and interested in the business for the wrong reasons. Laboratories testing on animals were wary of animal protester groups and the finances needed to protect staff and premises from this. Other organisations were careful about their engagement strategies to avoid other protester groups sabotaging their efforts:

"There is an issue around break in or attacks….we don't have the security to cope."
(Not interested, 11-49 employees)

"We don't attend general public exhibitions… I recall an incident where all I got was hecklers."
(Over 200 employees)

For certain businesses there were risks in third parties discovering too much about their business. They therefore limited their engagement work with respect to this. Many claimed they would avoid allowing visits to the premises and / or would censor carefully information about their practices. A couple of businesses in the research study had no contact with the public, selling directly either to other businesses (as a sub contractor) or to the military. In these cases, the businesses felt that it was inappropriate to promote themselves to the public for **confidentially reasons**.

"Sometimes it's a risk divulging the process of what we do…giving away our secrets."
(Fairly interested, 50-99 employees)

"Too many people already know enough about brewing… we have enough competition out there… why educate people to be my competitor?"
(Not interested, 50-99 employees)

Larger businesses (especially those working in more controversial areas) that were already doing a fair amount of public engagement noted that there could be cynicism about their public engagement activities. Some referred to the public asking questions about the 'true' business motivation and devaluing certain initiatives due to distrust in the business and its purpose.

"You always get it when you are giving away something for free …people want to know why, there's a mistrust and it can be down valued."
(Over 200 employees)

7. Public engagement experience

This chapter brings together the survey and depth interview findings to examine the extent of, frequency and type of public engagement activities being undertaken and the reasons for this. More specifically, this chapter will provide some examples through case studies of how and why the businesses engaged across different engagement areas.

7.1 Extent of public engagement work

Care must be taken in interpreting the true extent of public engagement activities as defined in the online survey due to the low response rate.[8]

7.2 Frequency of public engagement activity

The survey findings indicated that a quarter (27%) of businesses were never involved in public engagement activities[9]. Businesses were more likely to have been involved in marketing their own organisation than any other type of public engagement activity; 61% of businesses that took part had engaged in doing this is in the last 24 months.

Most businesses (76%) responded that they never or very infrequently interact with the public about science, technology, engineering and mathematics issues, topics, products and services.

Figure 5: Frequency of interaction with public about STEM issues

Q: How frequently would you say your business / organisation communicates or interacts with the public about STEM issues, topics, products and services?

■ Never   ■ Very infrequently   ■ Fairly infrequently   ■ Fairly frequently   ■ Very frequently

| 27 | 49 | 12 | 9 | 3 | % |
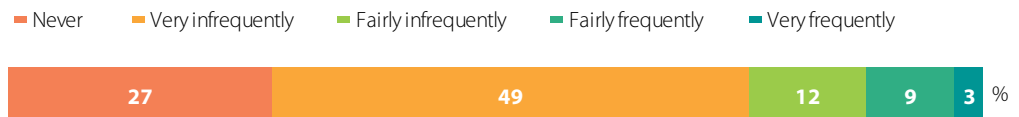
Base: All respondents (426)

Businesses with 200 or more employees were more likely to say they interacted or communicated with the public frequently. About a third (36%) said they interacted frequently with the public (compared to 12% overall).[10]

Businesses often referred to activities as *ad hoc* and being triggered by a business issue or need or in response to the public initiating contact with the businesses rather than businesses initiating contact (eg school pupils, parents, job candidates).

Many dismissed any suggestion that there was a strategy and described a more 'organic' process of project initiation through networking or some other means and then needing to pitch internally for approval and budget.

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8 The response rate to the survey was c. 3% (439 responses)
9 When asked how frequently their business / organisation communicated or interacted with the public about STEM issues, topics, products and services.
10 Findings at the sub-group level should only be regarded as indicative (due to low base sizes).
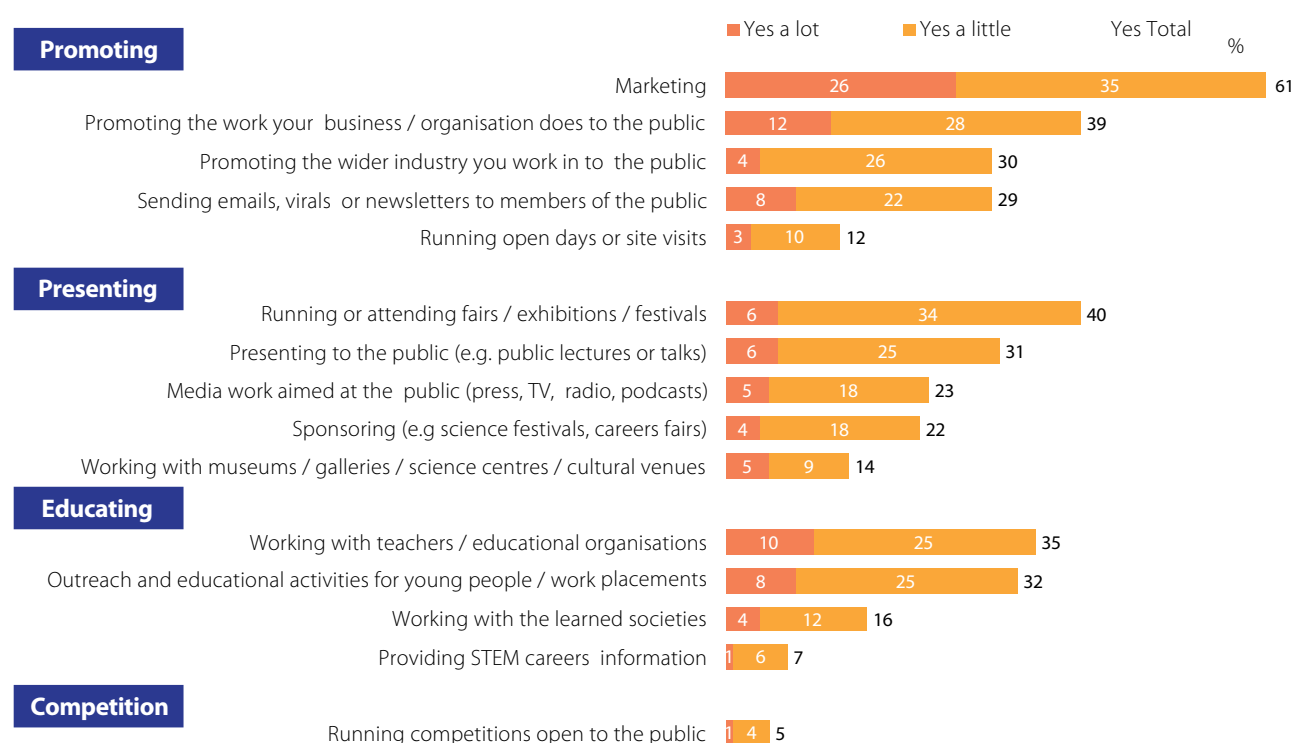
7.3 Type of public engagement

Businesses were presented with a list of activities that involved communicating or interacting with public about science, technology, engineering and mathematics. They were asked which of the listed activities their business / organisation had been involved with in the last 24 months.

Activities around transmitting information (promoting, presenting and educating) were more common than receiving (listening) or collaborating types of activity. Where businesses were receiving (listening) or collaborating, this was generally through market research for their products, over an issue directly affecting their business or as formal consultation in the local area. Figure 6 and 7 show the proportion of businesses engaging in types of activities under the three main types.

Figure 6: Proportion of businesses engaging in transmit types of activity

Q: Public engagement activities business / organisation involved with in the last 24 months that relate to communicating or interacting with public – Transmitting activities

	Yes a lot	Yes a little	Yes Total

Promoting

	Yes a lot	Yes a little	Yes Total %
Marketing	26	35	61
Promoting the work your business / organisation does to the public	12	28	39
Promoting the wider industry you work in to the public	4	26	30
Sending emails, virals or newsletters to members of the public	8	22	29
Running open days or site visits	3	10	12

Presenting

	Yes a lot	Yes a little	Yes Total
Running or attending fairs / exhibitions / festivals	6	34	40
Presenting to the public (e.g. public lectures or talks)	6	25	31
Media work aimed at the public (press, TV, radio, podcasts)	5	18	23
Sponsoring (e.g science festivals, careers fairs)	4	18	22
Working with museums / galleries / science centres / cultural venues	5	9	14

Educating

	Yes a lot	Yes a little	Yes Total
Working with teachers / educational organisations	10	25	35
Outreach and educational activities for young people / work placements	8	25	32
Working with the learned societies	4	12	16
Providing STEM careers information	1	6	7

Competition

	Yes a lot	Yes a little	Yes Total
Running competitions open to the public	1	4	5

Base: All respondents (426)

Figure 7: Proportion of businesses engaging in receive and collaboration types of activity

Q: Public engagement activities business / organisation involved with in the last 24 months that relate to communicating or interacting with public – Receiving and Collaborating activities

■ Yes a lot   ■ Yes a little   Yes Total

Receiving

Activity	Yes a lot	Yes a little	Yes Total
Running or attending public meetings / events /debates	3	20	24
Gathering public views and attitudes by carrying out research including surveys or questionnaires	4	9	13
Running focus groups / workshops with the public	4	4	7
Seeking public input into STEM research	1	5	5

Collaborating

Activity	Yes a lot	Yes a little	Yes Total
Co-produced research, with the public helping to shape the research question, design and / or delivery of products or services	2	6	9

Base: All respondents (426)

Marketing was the main activity businesses / organisations reported in this area (61%). More than a third (35%) reported having been involved in this 'a little' and 26% 'a lot'.

Businesses / organisations were slightly more likely to have **promoted the work of their own organisation** rather than the wider industry they worked in. Around 39% of respondents indicated their business / organisation had been involved in promoting their work to the public, while 30% said they had promoted the wider industry to the public.

A number of public engagement activities were aimed at **young people**. Overall, a third (35%) of businesses / organisations said they had worked with teachers / educational organisations within the last two years. 'Outreach and educational activities for young people / work experience placements' were most commonly cited activity (32%). About 16% also reported working with the learned societies to provide lectures, publicity and educational material. It also worth noting that only 7% said they had provided information about careers in the science, technology, engineering and mathematics sector over the last 24 months.

Businesses / organisations with 200 or more employees appeared more likely to have been involved in public engagement activities[11].

11 Findings at the sub-group level should only be regarded as indicative (due to low base sizes).

Businesses were selected for the qualitative research to include those engaging in the three types of public engagement: transmit, receive and collaborate. However, businesses had their own way of defining the work they were doing and four specific types of public engagement were relevant and being practiced by businesses:

• outreach with schools and young people

• outreach within the local residential community

• presenting to the public

• using intermediaries.

These overlap in places so for example, local outreach and or using intermediaries and presenting to the public (through science festivals and fairs) may include work with schools or young people. Furthermore, outreach with schools, presenting to the public and the use of intermediaries were all felt to be effective ways to communicate about science, technology, engineering and mathematics.

7.4 Outreach with schools and young people
Across the interviews there was a great deal of engagement experience in this area and a strong desire to do more. Around a third of all businesses in the survey had worked with teachers / educational organisers and / or helped with outreach and educational activities for young people.

Larger businesses described various large scale projects involving helping to teach lessons, running their own curriculum based lessons or workshops and after school club lessons with primary and secondary school aged children. Many also talked about offering support and learning to college and degree level students. Their aim was to educate and inspire.

Businesses felt strongly that this work was addressing a strong need to address the shortage of science skills and ultimately help future populations.

"98% of primary school teachers don't have a science degree."
(Over 200 employees)

"It's to encourage younger people to study science and engineering because if we are going to solve any of the world's problems then we need people with those skills."
(Over 200 employees)

Many businesses also referred to sponsoring or being involved in awards ceremonies at each of these levels for pupils showing aptitude and or winning a set task or project. A few of the larger businesses were involved in the Big Bang UK Young Scientists and Engineers Fair[12].

12 http://www.thebigbangfair.co.uk: The Big Bang is an annual event to celebrate science and engineering with students and educators.

Employees were said to find public engagement activities rewarding and an aid to developing new skills. More junior staff and or scientists and engineers benefited from improving their communication skills. Though not a typical activity, examples included:

- Businesses that had and were offering work experience placements and apprenticeships to their local community or a carefully selected elite and this had proved to be fruitful and rewarding for both parties most of the time.

- Businesses that had shown children around their laboratory or factory but had since stopped due to more stringent health and safety regulations.

Larger businesses felt under more pressure to monitor their activities and they admitted that this was difficult to do. Some admitted that they lacked the skills and experience to evaluate projects. Nevertheless, objectives were set and measured against such as number of schools involved, number of teachers using resources or in the case of the Big Bang, getting quantitative and qualitative feedback from attendees.

> *"When you have to go in front of the board and defend what you are doing and they say show me the results. How can you show the impact of the Big Bang? We can say this many people came and we surveyed this many people and they thought this……"*
> (Over 200 employees)

Smaller businesses stressed the challenge of keeping work experience students occupied and the time intensiveness of managing both placements and those having a tour of the premises. The input of senior staff was regarded as important to help inspire but an approach had evolved to ensure that senior staff were used efficiently in this induction process.

7.5 Local outreach
Local outreach can be split into two types:

- *Ad hoc* public consultation related to a specific issue or problem.

- An ongoing program of CSR activity.

This type of outreach concerned helping to raise the profile of the business in the local area and *"giving something back"* to the community. General ongoing outreach was felt to help the business to recruit locally and improve staff morale.

The following case study details an example of general outreach work with the local population.

Case study 1

- A global financial institution with a head office in another country
- Over 200 employees.
- Finance Director completed survey but realised half way through that HR manager would be best suited to respond. Paired depth interview conducted.
- Public engagement viewed as CSR within the local area and HR manager responsible for this.
- The CSR strategy of doing a) local outreach b) charity work c) funding green assets and how many staff are involved in this imposed by head office but a steering group in the UK (at all levels) meet once a year and chose what types of outreach to focus on.
- The local outreach includes helping stroke victims, working in special schools as classroom assistants, working with secondary schools and sixth form colleges to provide mentors in business studies courses. The school outreach work is driven by the schools needs rather than the mathematical skills the business has to offer.
- The business motivation for CSR local outreach was to raise the profile of the business, develop the skills of employees and help with staff morale and retention. A secondary motivation was to project a positive image of banks.
- Feedback is received from the community through surveys and informal conversations about how they perceive the organisation and how well the work is meeting their needs. This is used to monitor the effectiveness of the activity.

7.6 Presenting to the public

Running or attending fairs / exhibitions or festivals (40%) followed by giving lectures and talks (31%) were among the most common engagement activities.

Small to medium enterprises (SMEs) and larger businesses described engaging in a variety of activities as part of their PR. These included sponsoring museum exhibitions, running or attending fairs and various media work. A specific tactic to raise the profile of their business was to ensure that senior people were taking part in debates on radio and TV. To some extent, global businesses proclaimed that it was societal expectation that they should be presenting themselves in this way and essential to maintain the support of the general public.

The following case study is an example of an SME engaging both the general public and young people in promoting the business through extensive media work. The individual has positioned themselves as an expert in design and engineering within their industry.

Case study 2

- A product design agency doing research and brand strategy, trend research and design with 85 employees.
- Interviewed the founder.
- Individual sits on various trade associations, bodies, groups and charities to promote design and technology. He (and other staff) contributes regularly to press, TV and radio broadcasts, lectures and talks. Has worked with various museums. *"We take our PR very seriously……we always have something interesting to say and we do things that the public are interested in…"*
- Motivations for engaging through presenting primarily about recruitment and new business generation….*"A very good public profile helps with recruitment. So when people see what you do, they want to come and work with you… you get good people. Further reasons relate to developing staff - we put our young designers in schools… its good for their careers, they learn how to run a meeting or give a talk – they can practice their public speaking in front of people… "*
- Some barriers around confidentiality and *"giving away their secrets"*.
- A third of their 'PR' is working with schools and colleges (part of an awards scheme and supporting design teachers) and take work experience placements (*"the prestigious ones that provide us with the best graduates"*) when asked. *"It's a real honour to win. I get to hand out the prizes and to see the light in their eyes….I get to talk to them afterwards and it's a real joy to nourish the talent that's there."*
- Believes the key to enabling other science, technology, engineering and mathematics businesses to engage lies in helping them learn the skills to communicate their messages – websites, being better public speakers and making sure their message is interesting.

7.7 Using intermediaries

For those working in more controversial sciences there was a need to raise and communicate the issues in a more neutral and supportive way. Furthermore, in joining with other organisations this provided much needed weight in which to lobby government and shape policy.

In building a group or partnership, businesses felt more confident about engaging the public. Examples were given of businesses working with charities, trade associations or with the public sector through Public Private Partnerships.

The following case study illustrates a partnership approach to engage young people:

Case study 3

- Crop science company.
- Use 'outreach' as a term to talk about *"a social licence to operate."*
- No specific budget allocated to outreach, each project is pitched to the board and carefully thought about as to how close it matches business objectives.
- Work closely with FACE (Farming and Countryside Education) charity to help bring children into farms. They sponsored the development of a training and accreditation scheme for those farmers offering farm visits. In 2010 they held an awards ceremony to celebrate those farmers providing the best educational tools and involving their community. This was held at The Tower of London attracting an audience of key representatives from food and faming industries and education.
- The presence of a politician helped to give the event gravitas
- The awards were presented by Jim Paice MP, The Minister of State for Food and Farming…. *"I sold that in by saying it gets the message out there that school kids are benefiting and it pulled together 100 stakeholders who are people we want to influence."*
- Senior people across the business were invited to attend the event and this was a good way to give them the opportunity to get their message out and to motivate and engage them to talk about the activity.

8. Desire for further engagement

Combining the survey results and the findings from the depth interviews with businesses, this chapter considers whether those science, technology, engineering and mathematics businesses that are not engaged in any activities with the public have a desire for engagement and whether those already engaging with the public have a desire to do more.
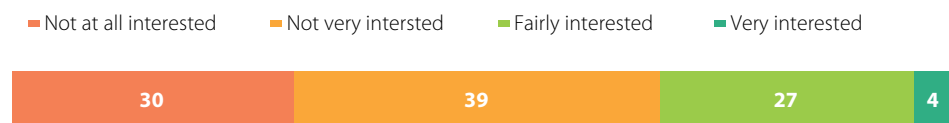
8.1 Is there a desire for (more) public engagement?

The final survey question asked respondents to what extent they thought their business / organisation was interested in becoming (more) involved in public engagement activities.

Future interest in public engagement was limited. Seven out of ten respondents (69%) said they felt their business / organisation was not interested in becoming (more) involved in public engagement activities. About three in 10 (31%) said their business / organisation was interested in becoming (more) involved in public engagement activities.

Figure 8: Desire for being involved in more public engagement

Q: To what extent would you say your business / organisation is interested in becoming (more) involved in these types of activity?

■ Not at all interested　　■ Not very intersted　　■ Fairly interested　　■ Very interested

Not at all interested	Not very intersted	Fairly interested	Very interested
30	39	27	4

Base: All respondents (426)

In the context of businesses already undertaking a considerable amount of public engagement activities, overall, the survey indicates that there is limited interest in further engaging the public. Indeed, three out of ten companies in the survey indicated an interest, but they tended to be only 'fairly' interested rather than 'very' interested. Where interest was expressed, this was typically only amongst the larger business (200+ employees)[13], re-affirming the discussion earlier in the report that smaller businesses feel they are constrained by financial resources and time.

While businesses that were already heavily involved in public engagement activities expressed interest in the survey they felt that they were already committing considerable resources and thought it was unlikely that they would in reality want to do more. However, they kept their options open for if a suitably attractive opportunity arose.

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13 Findings at the sub-group level should only be regarded as indicative (due to low base sizes).

Businesses that were not undertaking any public engagement activities were not completely adverse to the notion. The survey indicates that of those that had very infrequently, undertaken public engagement activities, a third expressed an interest in doing so. However, of those that had never been involved in public engagement activities, only one in twenty expressed an interest. If they were to get involved there would need to be a clear financial benefit to them in the form of increased sales; lack of resources and time was a key issue to their participation. Businesses that did not directly deal with the public saw little advantage to doing any public engagement at all.

8.2 What would be the focus of (more) public engagement activities?

Businesses that were interested in undertaking public engagement activities or becoming further involved tended to focus on the same two areas.

First, there was a keen interest in **educational outreach activities**. Businesses that were already working with schools considered that this was an extremely important area in which to continue. There was considerable attachment to working in schools, for three key reasons:

- Businesses saw this as the first step in 'inspiring' young people in the science, technology, engineering and mathematics industries and *"creating the engineers of the future"*.

  "It disappoints me that children don't want to go into engineering – [they think] other careers are sexier and more exciting and better paid and I think that's a real shame."
  (Fairly interested, 50-99 employees)

- School-related activities were considered to be highly regarded by the local community.

- Staff that undertook school-based engagement activities tended to bring back the enthusiasm of the classroom into the workplace.

Second, there was considerable passion to **promote and reinvigorate specific industries** in the UK rather than science, engineering, technology and mathematics specifically eg manufacturing, design and engineering, in particular. Businesses in these sectors felt that their public image was generally either poor or confused.

"If you think about our heritage and our great engineers … these people were super heroes and these were the people you read about. When I was a kid reading Eagle people like Mitchell who designed the spit fire was a hero. Where are the heroes in engineering?"
(Fairly interested, 50-99 employees)

"Manufacturing is very important and you have to make people realise this."
(Not interested, 1-5 employees)

"We would be keen to raise the profile of manufacturing because it is still alive and it is expanding…. like to see a Buy British campaign."
(Not interested, 50-99 employees)

Again, businesses felt that the way to address negative images of these sectors was initially through work with schools; continued activities with higher education were also seen as essential in order to align educational courses with the needs of industry and that graduates leave higher education with the skills that fit with industry requirements.

> *"It's still seen as oil under fingernails and yet it is absolutely critical to our future. It is a physical world and engineers have a primary role to play in all of that."*
> (Fairly interested, 50-99 employees)

While many of the larger businesses in the qualitative research were already working with BIS (for example, as part of the advisory group and or with The Big Bang), their professional bodies and other umbrella groups, there was also a desire on the part of others to become involved, or help support, other groups or government to *"inspire the nation"* about science, technology, engineering and mathematics businesses. Ultimately this was for sound business reasons – to develop the business, and the sector, by bringing more high calibre graduates into the sector.

Some businesses did not want to commit resources to a programme of public engagement activities. Yet, they were willing to get involved in a modest way. Indeed, there was some receptivity to requests from the public, amongst these businesses, and act on these rather than initiate own public engagement activity.

> *"We get approached and then decide on a case by case if it's worth our while…*
> *I don't usually allow anyone to come and do work experience but I had an email the other day from someone and I was so impressed that she is coming in in a few weeks."*
> (Fairly interested, 50-99 employees)

As discussed earlier, businesses that operate in controversial areas of the sector, such as genetics, pharmaceuticals and aviation were keen to keep a low profile. However, they were not unwilling to be involved in engaging the public but preferred to do so through an umbrella group or intermediary.

9. Strategy and recommendations to encourage and build capacity for public engagement

Businesses have a clear reason and purpose for specific engagement activities. A business will more likely think about its marketing or its CSR strategy or a business problem. **The starting point is a business need or objective** not a desire to do public engagement activities or the process of public engagement.

Stakeholders raised the importance of making clear the link between public support and sales for businesses.

Public engagement is not thought about or structured as one area within a business. **The term 'public engagement' is unhelpful** as the activities that sit under this are so different and straddle various departments, individuals and strategies within the larger business.

Businesses are therefore more likely to respond to communications or interventions that relate to a specific area or group of activities. As such, we would recommend that any business and public engagement **strategy targets specific types of activity, audiences or business needs**.

Those looking to build public engagement capacity in the private sector need to **capture the distinct and different needs of businesses and dovetail their objectives with the business objectives.**

Across all types and sizes of businesses, there is an **appetite and desire to be doing outreach with schools and young people**. Not only do businesses feel that this is the route to inspiring and educating the next generation but there are rewards for the business itself and the individuals within the business involved in carrying out the activities. We recommend that this be a priority area in supporting and promoting to capture businesses interest.

Larger businesses or those working in controversial sciences have reasons for engaging the public in science, technology, engineering and mathematics or their sector's issues to try to bring about a change in attitude or positive publicity. However, in general, a SME is likely to defer responsibility of this to larger, more global businesses. **The route into these smaller businesses may be to encourage local outreach or work with schools and young people** as these have more wide ranging benefits and rewards. There is a further need to gently **help these smaller businesses to see the skills and value they have and how they can flavour their outreach work with science, technology, mathematics or engineering** as opposed to general CSR. An effective way to communicate to businesses may be through collating and disseminating good practice via case studies showing how similar companies to theirs (all sizes, all types) offer their science, technology, engineering and mathematics skills to the community.

The SME is motivated more by issues relating to their individual industry eg manufacturing rather than say, engineering or science, technology and mathematics. Not all businesses identify with the STEM acronym. We recommend therefore that **initiatives and networks are targeted at an industry level if possible**. Networks may be more useful for the smaller business but the challenge will be helping them to justify the time investment. A way around this may be to **provide useful hooks for the small business in offering general business and marketing advice.**

Whereas some public sector bodies appear to have an understanding of their responsibility and even duty to explain, discuss and communicate what they do, especially where it may be controversial or raise social and ethical issues, many in business prefer to keep a low profile or do not seem to recognise it as a responsibility. For those working in more controversial areas then the use of groups, networks and intermediaries is an effective way to raise issues in a safe way and to some extent help to improve reputation. **We recommend that the *Science for All group* and wider public engagement community help to create and maintain these links.** Furthermore, initiatives and networks will be more appealing to businesses if recognisable organisations are involved. As one respondent confessed, *"I replied to this survey because it was the Royal Academy of Engineering…."*

In the promotion of sector or science, technology, engineering and mathematics, the *Science for All group* and wider public engagement community may be able to play a role in **helping and supporting individuals with the skills, environment and influence in achieving this**. For example, coaching individuals in communication skills and / or collating and disseminating good practice.

> *"They have something interesting to say but no ones ever told them how to say it in an interesting way."*
> (Fairly interested, 50-99 employees)

There also seems to be a need and therefore a role for the *Science for All* group and the wider public engagement community to play in **helping businesses to measure and monitor the impact of activities**. Monitoring impact was felt to be challenging to those working in public engagement or CSR roles with a lack of experience in research, economics and metric testing and need help in justifying the importance of the activity.

Finally, the research highlighted the lack of strategy and almost organic process behind many of the projects and activities that businesses are involved in. Furthermore, many of these activities were a response to a request from outside of the business. As such, we see that thought could be given to **how to encourage the public to approach businesses** and provide information and support on how the public should do this, for example, students approaching businesses in their local area about work experience opportunities.

APPENDIX 1: The online survey

The Royal Academy of Engineering

BIS | **Department for Business Innovation & Skills**

Thank you for taking the time to answer these questions. The questionnaire should take no longer than 5 minutes to complete.

Your responses will be treated in strictest confidence in accordance with the Data Protection Act. It will not be possible for anyone to identify you in the survey findings.

The survey has been commissioned by The Royal Academy of Engineering (RAEng) and the Department for Business Innovation and Skills (BIS) and is being conducted by TNS-BMRB, an independent research company.

Q1. Firstly, please briefly describe the type of business / organisation you work for and the products and / or services it offers.

- *PLEASE TYPE YOUR ANSWER IN THE BOX BELOW*

INTRO

We are interested in how businesses / organisations communicate and interact with the public regarding science, technology, engineering and mathematics (STEM) related issues, topics, products and services. This might include:

- Communications with the wider public about your organisation or sector relating to science, technology, engineering or mathematics

- Promoting your organisation's new developments, products and services

- STEM educational activities for young people

- Gathering public attitudes or views on a particular STEM issue, service or product

- Involving public in the research and development of future services and products

Q2. Looking at the following list, please select which of the following activities your business / organisation has been involved with **in the last 24 months** that relate to communicating or interacting with public **about STEM (STEM) related issues, topics, products and services**…

PLEASE ANSWER ABOUT THE ORGANISATION AS A WHOLE – NOT JUST THINGS YOU HAVE PERSONALLY BEEN INVOLVED IN

CHOOSE ALL THAT APPLY

	No	Yes – involved a little	Yes –involved a lot
Presenting to the public (eg public lectures or talks)			
Media work aimed at the public (press, TV, radio, podcasts)			
Sending emails, virals or newsletters to members of the public			
Promoting the work your business / organisation does to the public			
Promoting the wider industry you work in to the public			
Running open days or site visits (where members of the public can come into your place of business)			
Working with museums / galleries / science centres and other cultural venues			
Working with teachers / educational organisations			
'Outreach' and educational activities for young people / work experience placements			
Providing STEM careers information			
Co-produced research, with the public helping to shape the research question, design and / or delivery of products or services			
Running or attending public meetings / events / debates			
Running or attending fairs / exhibitions / festivals to which members of the public are invited			
Marketing			
Seeking public input into STEM research / product / service development and design			
Gathering public views and attitudes by carrying out research including surveys or questionnaires			
Running focus groups / workshops with the public			
Working with the learned societies to provide lectures and publicity and educational material			
Sponsoring or otherwise lending your name to activities that engage the public (e.g science festivals; careers fairs)			
Running competitions open to the public			

INTRO

The types of activity we just described are sometimes referred to as 'public engagement'.

ASK ALL

Q3. Generally speaking, how frequently would you say your business / organisation communicates or interacts with the public about STEM (SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS) issues, topics, products and services?

• Very frequently
• Fairly frequently
• Fairly infrequently
• Very infrequently
• Never

IF EVER INVOLVED - Q3 = (VERY FREQUENTLY; FAIRLY FREQUENTLY; FAIRLY INFREQUENTLY; VERY INFREQUENTLY)

Q4. What would you say are the main reasons for your business / organisation being involved in these types of activities? / what prompted you to start doing these things?

CHOOSE ALL THAT APPLY

• To promote your organisation or sector
• To help recruit the future workforce for your sector or organisation
• To inspire and educate young people
• To improve perceptions of your organisation or sector
• To increase sales of products or services of your organisation
• As part of your commitment to Corporate Social Responsibility
• To build / improve community relations
• To develop better products and services
• To gather public attitudes and views to inform decision making
• For professional development of staff in terms of communication skills
• To better manage situations that might be controversial to the wider public
• As a form of market research
• In order to trial ideas or products amongst a critical test community
• To have a positive impact on the communities in which you operate
• Other – please specify

IF INVOLVED FAIRLY INFREQUENTLY / VERY INFREQUENTLY OR NEVER (FROM Q3) – TEXT AT Q5 VARIES DEPENDING ON RESPONSE AT Q3

Q5. You said your business / organisation *[never / only infrequently]* does these types of activities… Which of the following best describes why this is?

- Our work / business is not relevant to STEM
- Our work / business is not relevant to the public
- Our work / business is confidential
- Our work / business is controversial
- Lack of interest among **the public**
- Lack of interest **within the company** to do this type of thing
- Cost – it is too expensive
- Time – it takes too long
- It is being done adequately by others and so we do not see a need to get involved
- We do not believe we can make a difference
- Do not know how to get involved
- We are too small to support this type of activity
- Too difficult to organize
- Too resource intensive
- Some other reason (specify)

ASK ALL

Q6. Thinking about these types of 'public engagement' activities – would you say your business / organisation is doing more, less or about the same compared with a few years ago?

- A lot more
- A lot less
- About the same
- A little less
- A lot less

ASK ALL

Q7. IF NOT INVOLVED (IF Q3 = NEVER AND Q2 = NONE OF THESE): To what extent would you say your business / organisation is interested in becoming involved in these types of activity?

IF INVOLVED (IF Q3 = CODES 1-4 (EVER DO) OR Q2 = AT LEAST 1 POSITIVE RESPONSE):
To what extent would you say your business / organisation is interested in becoming **more** involved in these types of activity?

- Very interested
- Fairly interested
- Not very interested
- Not at all interested

IF NOT INTERESTED
Q8. Why do you say that?

PLEASE TYPE YOUR ANSWER IN THE BOX BELOW

ASK ALL
Q9. Please provide your job title below and a brief description of your role within your business / organisation…

This will help to ensure we have included the opinions of range of different people

PLEASE TYPE YOUR ANSWER IN THE BOX BELOW

Q10. It is possible that the Royal Academy of Engineering & BIS may undertake some further research to follow up on particular issues arising from this survey. Would you be willing to be re-contacted by for this purpose?

Please be assured that your responses will be treated in strictest confidence in accordance with the Data Protection Act. It will not be possible for anyone to identify you in the survey findings.

- Yes
- No

IF YES to Q10:

Q11. To help us contact you please type in your **name and telephone number** in the space provided below.

Please be assured that your responses will be treated in strictest confidence in accordance with the Data Protection Act. It will not be possible for anyone to identify you in the survey findings.

PLEASE TYPE YOUR ANSWER IN THE BOX BELOW

Thank you for taking part. As mentioned we will be happy to share the final report of the survey findings with you. We will email you with a link to the report when this is published.

APPENDIX 2: The Discussion Guide

FINAL Discussion Guide for depth interviews with businesses 8th Dec 2010

6 x 60 minute interviews (where possible as paired depths)
10 x 45 minutes interviews (where possible as paired depths)
Fieldwork period: 2 -17th December and beginning of January 2011

Research objectives
To build greater understanding of the motivations, rewards and barriers for STEM-related businesses and to consider how to further engage STEM-related businesses in communicating with the public. More specifically:
- Understanding the sectors **attitude** towards PE and the language they use to define this
- To understand the **level of importance** attached to PE in a businesses / how embedded is it within the organisation and how is this achieved
- To explore what has and does motivate businesses to engage the public – what are the **rewards** (for individuals within a business and the business) and why
- To understand the **barriers** to undertaking PE
- Explore the **types of PE** undertaken and experiences in terms of what's perceived as successful and unsuccessful
- To ascertain what businesses perceive to be the ways to develop and increase their PE activities and how best to **encourage other businesses** to engage with the public more

Note to interviewer: use questionnaire as a prompt as and when and tailor the interview according to this

Note to interviewer: insert language they use upfront to describe what public engagement is – eg Communications

Introduction and warm up   5 minutes
- Introduce Interviewer / TNS-BMRB (business card)
- Purpose of the research
- MRS Code of Conduct - Confidentiality / Recording / Anonymity (explain that comments will not be attributable to organisations if they wish to remain anonymous).
- Any questions?
- Can you tell me a bit about your organisation
- And what is your specific role

Public Engagement Landscape 10-15minutes
(If appropriate – for those completed the survey) You mentioned in the survey a number of engagement activities that your organisation undertakes with the public. We want to explore them in more depth in a moment, but in general….

If completed the survey and not undertaken any activities or if not completed the survey then prompt with examples from Showcard 1

- What sorts of activities does your organisation routinely do?
- And who are they aimed at – is it your customers, young people or the general public?
  - Probe how they define groups
- How would you define these activities collectively?
  - And would you ever use the term 'public engagement'? Probe for what this term means to them / associations / where and when they have heard the term / who uses the term
- Why does your organisation do these types of activities
- What value does the organisation place on 'public engagement'?
  - Probe what the organisation gets out of it

- How would you define these activities
- Which of these do you see as more or less as 'public engagement' and why / what other language do you use to define these
- Is there anything missing from here that you define as 'public engagement'

Experience, triggers and rewards   10-15minutes

(For those with PE experience from survey) We now want to explore some of the answers you gave in the survey in a little more depth. You mentioned in the survey that your business has undertaken…..

- Can you tell me more about this? Probe for:
  - What were they communicating about
    - Probe in relation to science, technology or engineering
  - How it came about / who or what instigated this happening
  - What were the objectives for doing this activities
  - Who in the organisation was involved in this
  - Who made the decision to do this / how was 'buy in' sought
  - What were the pros and cons of the activity
  - How did it go
  - Would they do it again
  - What things would stop or hinder you doing it more

Note to interviewer: Repeat for different types of activities undertaken - choose with the respondent 2-3 activities they have most experience in. Read out or show Show card 1 if appropriate to remind them of activities

Note to Interviewer: For those with no or low levels of PE show or read out a list of PE activities (Showcard 1) and discuss which they feel is appropriate for their business / they have tried using

Note to Interviewer: For those that have not completed interview ask about the 3-4 activities that they have most experience in

General rewards and barriers   15minutes

Note to interviewer: the next part will be tailored to the business response to the survey and or based on discussion about activities from the previous section

Note to interviewer: more time should be spent in this section for those with limited PE experience. Aim to get an understanding about the general motivations and barriers towards doing more PE, the motivations and barriers towards specific types of PE (transmit, listening, collaboration – Showcard 2) and motivations and barriers towards specific PE activities from Showcard 1 / the activities focused on in the previous section

FOR THOSE NOT DOING ANYTHING:
Show / read out transmit types of activities from Showcard 2
- What are the reasons why you haven't done much of these types of activities
- Would there be any reason to consider this in the future
- In what circumstances would your business do more of this

FOR THOSE ONLY DOING ONE WAY COMMS:
- (If not already mentioned) why did your business do this / what were or are the benefits
- Why would a business do this / what are the motivations
- What types of business do and don't do this

Overall, when thinking about these activities, they may be defined as one way communication – generally underlined-informing people. Have you ever considered greater involvement or feedback from the public in your business (Interviewer to use prompt sheet – showcard 2 with collaboration and receive activities listed)

- Why / why not
- Probe barriers
  - Business relevance
  - Cultural
  - Know how
  - Reputational risks

Would there be any reason to consider this in the future

FOR THOSE INVOLVED IN TWO WAY COMMS:
Refer to Showcard 2

From our survey, most business who communicated to the public focused on one way communications - generally informing people. Only a few, such as yours, listened to public feedback or [if applicable, collaborated with the public] involved them in decisions. I am very interested to explore in more depth why this is.

- What would you say sparked your company's interest in this area
- What are the benefits and risks / Why do businesses not engage the public in these ways
- Why do you think your business is different to others we have spoken to in this regard
- How important do you think these types of activities will be in the future to your business

Enabling or encouraging Public Engagement activity   5-10minutes
- What sorts of things, if any, would need to be in place to encourage your organisation to communicate / engage with the public more
  - Probe internal
  - Sector wide; other organisations; trade associations
  - External – government; other organisations
- What ideas or schemes have you heard about that have helped businesses to engage / interact with the public? Prompt awareness, experience and appeal of specific initiatives:
  - Networks
  - Larger businesses supporting smaller business
  - Trade associations
  - Toolkit
  - Manual, articles
  - Any other activities
- Who is most appropriate to provide help and advice to help you do this? Who would you listen to / trust
- Overall, do you think your organisation will do more or less of these activities over the next few years?

Wrap up   2-5minutes
Anything else
- Any questions for us
- Ask if they would be happy for their organisation to be written up as a case study and comments to be attributable. They would still have the option for certain parts of the interview to remain anonymous (these would need to be decided with the interviewer)
- Ask if they would mind having their contact details passed onto the RAEng and BIS to discuss being involved in a public engagement network. This would mean that RAEng and BIS would know that their organisation has taken part in the qualitative research (is one of 16 other organisations).

THANK AND CLOSE

Showcard 1

Sending emails, virals or newsletters to members of the public

Promoting the work your business / organisation does to the public

Marketing

Promoting the wider industry you work in to the public

Running open days or site visits (where members of the public can come into your place of business)

Presenting to the public (eg public lectures or talks)

Media work aimed at the public (press, TV, radio, podcasts)

Working with museums / galleries / science centres and other cultural venues

Running or attending fairs / exhibitions / festivals to which members of the public are invited

Sponsoring or otherwise lending your name to activities that engage the public (e.g science festivals; careers fairs)

Providing STEM careers information

Working with teachers/ educational organisations

'Outreach' and educational activities for young people / work experience placements

Running competitions open to the public

Running or attending public meetings / events / debates

Gathering public views and attitudes by carrying out research including surveys or questionnaires

Running focus groups / workshops with the public

Co-produced research, with the public helping to shape the research question, design and/or delivery of products or services

Showcard 1

Transmitting

Promotion

Sending emails, virals or newsletters to members of the public

Promoting the work your business / organisation does to the public

Marketing

Promoting the wider industry you work in to the public

Running open days or site visits (where members of the public can come into your place of business)

Presenting

Presenting to the public (eg public lectures or talks)

Media work aimed at the public (press, TV, radio, podcasts)

Working with museums / galleries / science centres and other cultural venues

Running or attending fairs / exhibitions / festivals to which members of the public are invited***

Sponsoring or otherwise lending your name to activities that engage the public (e.g science festivals; careers fairs)

Educational / Schools

Providing STEM careers information

Working with teachers / educational organisations***

'Outreach' and educational activities for young people / work experience placements

Competitions

Running competitions open to the public

Listening

Running or attending public meetings / events / debates

Gathering public views and attitudes by carrying out research including surveys or questionnaires

Running focus groups / workshops with the public

Collaboration

Co-produced research, with the public helping to shape the research question, design and /or delivery of products or services