European Agency for Safety and Health at Work

Success factors for achieving policy impact in foresight studies

European Risk Observatory

European Agency for Safety and Health at Work

Authors,
Dr Annette Cox, Institute for Employment Studies
Sam Swift, Institute for Employment Studies
Dr Martin Rhisiart, University of South Wales

Project management:
Laura Vicente, Emmanuelle Brun - European Agency for Safety and Health at Work (EU-OSHA)

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Executive Summary

The European Agency for Safety and Health at Work (EU-OSHA) strategic programme 2014-2020 has highlighted the need for forward looking research, in order to generate effective strategies and develop research tools for OSH. IES was commissioned by EU-OSHA to research success factors which affect the impact of foresight research on policy. The project included a literature review of global foresight research and fifteen interviews with research commissioners and foresight research experts. The literature review found a relatively limited body of evidence on foresight impacts, especially from policy user perspectives, which made assessing policy impact challenging. The long time before foresight impacts are fully recognised also makes it difficult to capture these so monitoring over several years is desirable.

Policy impacts – innovative collaboration to change policy processes

Policy impacts from foresight studies included helping stakeholders to innovate and develop new ways of working and problem solving with a long-term perspective, and creating new networks through bringing stakeholders from education, business and policy together across different disciplines. Increased public awareness of policy issues and the development of long-term strategic approaches to policy development were also positive outcomes of the foresight process. Foresight studies have helped gain legitimacy for policies through making the mechanisms for policy creation transparent. Wider impacts included promoting links across sectors and raising policy awareness of the topics covered in foresighting exercises. Additionally, foresight studies led to greater innovation in research and policy making overall, promoting collective learning and educating stakeholders about future opportunities and challenges. Incorporating a large number of diverse types of experts into the foresight process helped build engagement with the policy area among a wide range of people. IT and social media tools are increasingly being used in foresight activities to engage with a more diverse range of stakeholders. This can enhance the quality and impact of the foresight activities. Overall, impacts appear stronger in influencing policy making processes than policy outcomes, partly because policy options are influenced by many other factors including political contingencies. Changes in political priorities and stakeholders also make it challenging to develop a consensus around whether particular foresight exercises were successful.

Success factors

This study identifies 17 key factors for achieving policy impact in foresight studies. The first is developing a clear, challenging question and focus for each foresight study to secure client interest, linking this closely to the policy agenda driving the study. Having a key policy customer represented on and closely engaged with the foresight research team can help ensure that studies accommodate variations in policy priorities and ensure that end users are primed about likely outputs. There is a need to educate and manage user expectations about the purpose and value of foresight, and to prepare them adequately to maximise their contributions to data collection events such as expert workshops. Using mixed methods covering quantitative and qualitative techniques can help to engage policy makers from different disciplines by providing research findings in a form that will engage them. Clear management and communication to optimise the project management process and timely delivery of expected outputs is important.

A range of innovative and visually engaging outputs were also vital to the success of foresight projects; these can include vignettes and infographics to capture attention, bring data to life, help users envisage future worlds and signpost users to the most relevant sections of outputs. Customising scenarios to engage key interest groups is helpful here. Sharing all outputs transparently so that stakeholders can use the most relevant for future work can help diffusion of knowledge generated through foresight. Building techniques for measuring impact of foresight over the long-term would be helpful in monitoring broader policy change over time.

Table 1 below summarises the key factors identified as important for achieving policy impact through foresight studies.

Table 1: Key Factors for Achieving Policy Impact in Foresight Studies

	Factor	Remit of
1	Clarify what the foresight study is seeking to achieve which cannot be achieved by other policy means	Commissioners
2	Engage appropriate stakeholders through the foresight study and beyond in its implementation	Commissioners Researchers
3	Establish a clear link between foresight and policy agenda	Commissioners
4	Identify clients/beneficiaries and users of foresight study	Commissioners
5	Use of expert foresight contractors to sell and explain the benefits of the methods, and assume advisory role to policy makers on foresight use	Commissioners
6	Embed client representation on the foresight research team	Commissioners
7	Ensure policy engagement by achieving relevant focus	Commissioners
8	Ensure political and policy ownership	Commissioners
9	Education of clients and participants	Commissioners Researchers
10	Project management: frequent communication to keep project on track	Commissioners Researchers
11	Measuring impacts to increase perceived value	Researchers and commissioners
12	Incorporating range of appropriate disciplines in the foresight study	Researchers
13	Managing expectations	Researchers
14	Communication and engagement: produce high-quality outputs that can engage with different stakeholder groups/audiences	Researchers
15	Ensure balance between breadth of topic coverage and depth analysis	Researchers
16	Deploy foresight methods appropriately – the value added of foresight approaches	Researchers
17	Adaptation and flexibility as client's goals change and the involvement of different actors can alter over the course of a project.	Researchers

1 Introduction

This report presents findings from a research project commissioned from IES by the European Agency for Safety and Health at Work (EU-OSHA) to undertake an exercise which will make recommendations about how to generate policy impact from foresight studies. These will then be finalised by EU-OSHA in consultation with its stakeholders.

1.1 Background to the study

The two previous Community Health and Safety at work strategies 2002-06 and 2007-12 emphasised the need "to provide forward looking information for policy-makers" and called on EU-OSHA to do so while the latest Europe 2020 strategy emphasises the need for strategic research that will tackle major policy challenges including health and ageing. Additionally, the EU Occupational Safety and Health (OSH) Strategic Framework 2014-2020[1] highlights the need for improvement in the prevention of work-related diseases by tackling existing, new and emerging risks. Anticipating change and new and emerging risks is also one of the EU-OSHA's priority areas. The objective of anticipating changes is to provide credible and good quality data on new and emerging OSH risks that meet the needs of policy-makers and researchers and allow them to take timely and effective action.

EU-OSHA intends to build upon the foresight studies that it has already piloted and will continue anticipating new and emerging risks and challenges to OSH through a series of foresight projects to improve the timeliness and effectiveness of preventive measures. EU-OSHA's 2010-2012 pilot foresight on green jobs showed a high level of engagement and interest from the target group in the project. The specific objective of the foresight activities is to produce high quality information on new and emerging OSH risks and challenges and to stimulate discussion on the issue. As a result, it aims to provide policy-makers, researchers and workplace intermediaries, at EU and national levels, with ways of addressing such risks, as well as a basis for priority setting for OSH research and actions. EU-OSHA "Scoping study for a foresight on new and emerging occupational safety and health (OSH) risks and challenges" described the methodology and findings of a study examining emerging trends and areas of future concern in OSH and their potential for a future large-scale foresight study.

As the primary objective of the foresight activity is to inform long-term policy-making, it is important to identify factors of successful transfer of foresight result into long-term planning, policy and decision making at all levels. Therefore, following the EU-OSHA 'Foresight on Green jobs and occupational safety and health: Foresight on new and emerging risks associated with new technologies by 2020' and as a preparation for the next large-scale foresight, this complementary study has been conducted to identify success factors for the transfer of foresight findings into policy making.

1.2 Scope, aims and objectives

The objective of this project was to learn from other foresight studies and identify the success factors for the effective transfer of foresight findings into policy-making. The project will serve to strengthen the up-take and impact of EU-OSHA's future foresight studies as well as to foster the wider, more systematic integration of foresight activities into policy-making.

1.3 Method

The project had two phases:

1. Literature review of research on the impact of foresight studies and critical success factors in achieving policy impact. This includes literature beyond the subject of OSH.
2. Telephone interviews with fifteen experts.

[1] http://ec.europa.eu/social/main.jsp?catId=151

1.3.1 Literature review method

IES conducted a literature search based on the sites and search terms identified in the proposal and focused on academic databases. More details of this process are given in Annex C. Overall, the primary area of interest was the impact and success factors for use of foresight methodologies to influence policy making. Priority searches focussed on identifying grey literature including policy reports and unpublished sources from national and international researchers and bodies through web-based searches. There is a relatively limited body of evidence on foresight and difficulties in defining the goals and purpose of studies from the perspective of end users, usually because these stakeholders are not necessarily involved in commissioning research. This means that assessing policy impact is challenging. Assessing foresight activities – and their policy impact – has its own challenges in terms of scope, methods and evaluation timescales (Rhisiart and Jones-Evans, 2015). It is not the same as evaluating discrete policy programmes. There is also very little research that focusses on success factors in influencing policy.

Some examples of websites interrogated included:

- Risk Radar from Suva in Switzerland: http://www.suva.ch/startseite-suva/die-suva-suva/medien-suva/suva-dossier-suva/frueherkennungsradar-suva.htm
- UK Foresight Programme through HSE/HSL: http://www.hse.gov.uk/horizons/
- INRS Future Scanning and Foresight in France: http://en.inrs.fr/
- Futur Programme in Germany: http://www.bmbf.de/en/18378.php
- EU Foresight Monitoring Platform: http://www.foresight-platform.eu/
- International sources (e.g. OECD, ILO, Cedefop, Eurofound, European Commission)

The academic literature search generated a large number of items but screening them on abstracts and keywords showed some gaps in the literature. Many items did not address the focal issues for this study and focused on descriptive accounts of foresight activity, seeking to map a large and disparate field of studies.

Following the construction of a short-list of evidence for review, the proforma shown in Annex D was developed to ensure consistency of approach in reviewing the literature and extraction of evidence which was agreed with EU-OSHA based on its requirements and prior experience. The pro-forma covered study characteristics, context, quality and findings and an assessment of the level of 'scientific rigour' of each article, based on transparency of description of research methods used, their rigour and use of evidence to support conclusions drawn.

1.3.2 Expert interviews

This phase of the study involved telephone interviews with fifteen experts with experience in different areas of the foresighting process; research experts, communicators of research findings, and commissioners of foresighting projects. Interviews were conducted in English, took place between March and June 2015, and lasted around 30-45 minutes. The list of experts interviewed is shown in Annex A. The interviews were conducted on the basis of offering individual anonymity so views expressed in this report are not attributed to named experts. Interviews were tape recorded and researchers made detailed notes from the recordings. The topic guide used is shown in Annex B. The interview guide and background document was piloted with three interviewees in the first phase of the research.

1.4 Report structure

The remainder of this report consists of two sections. Section Two outlines the findings from the literature review and expert interviews on foresight impacts and critical success factors in achieving them. Section Three outlines the report conclusions.

2 Evidence on impact and success criteria for foresight studies

2.1 Introduction

This section introduces the concept of foresight, explains the overall approach and then reports the range and types of subject matter covered by foresight identified through the literature review, the types of impact achieved and the factors which affect the degree of impact reported.

A foresight process can be a helpful mechanism to address the following:

- Deal with uncertainties
- Offer an integrative framework to coalesce and synthesise deep disciplinary or domain level knowledge – often to address a problem that spans individual boundaries
- To improve the capacity of organisations individually and collectively to anticipate future changes – to maximise opportunities and to mitigate risks
- To engage with stakeholders from different organisations and communities on issues of common interest – often to build a shared understanding of future challenges and needs

They can use a wide variety of methodologies, are typically conducted over long time periods ranging from 10 to 50 years, tackle wide-ranging societal problems and can focus on both possible and likely issues (Van Woensel and Vrščaj, 2015).

Most foresight projects use a combination of methods. Alongside the more specialised approaches developed within futures research – for example, drivers analysis, Delphi studies and scenario building – generic methods such as qualitative interviewing and literature reviews are commonly used. The most comprehensive resource available on futures methods – providing theoretical background and practical implementation guidance – is the Millennium Project's *Futures Research Methodologies v3.0*. It reviews 39 futures research methods, illustrating the diversity of techniques and tools that are available to Foresight practitioners (Glenn and Gordon, 2009). These methods are of different orders and types. Some (for example, scenarios) are more holistic and can subsume or integrate other techniques; whilst others have a narrower focus. Some of the 39 methods have wider applications in other types of research for example, statistical modelling, and agent modelling, although they have been used in foresight exercises. More detail is provided on the advantages and disadvantages of different foresight methods in the previous Scoping Study for a Foresight[1] (Cox et al., 2014).

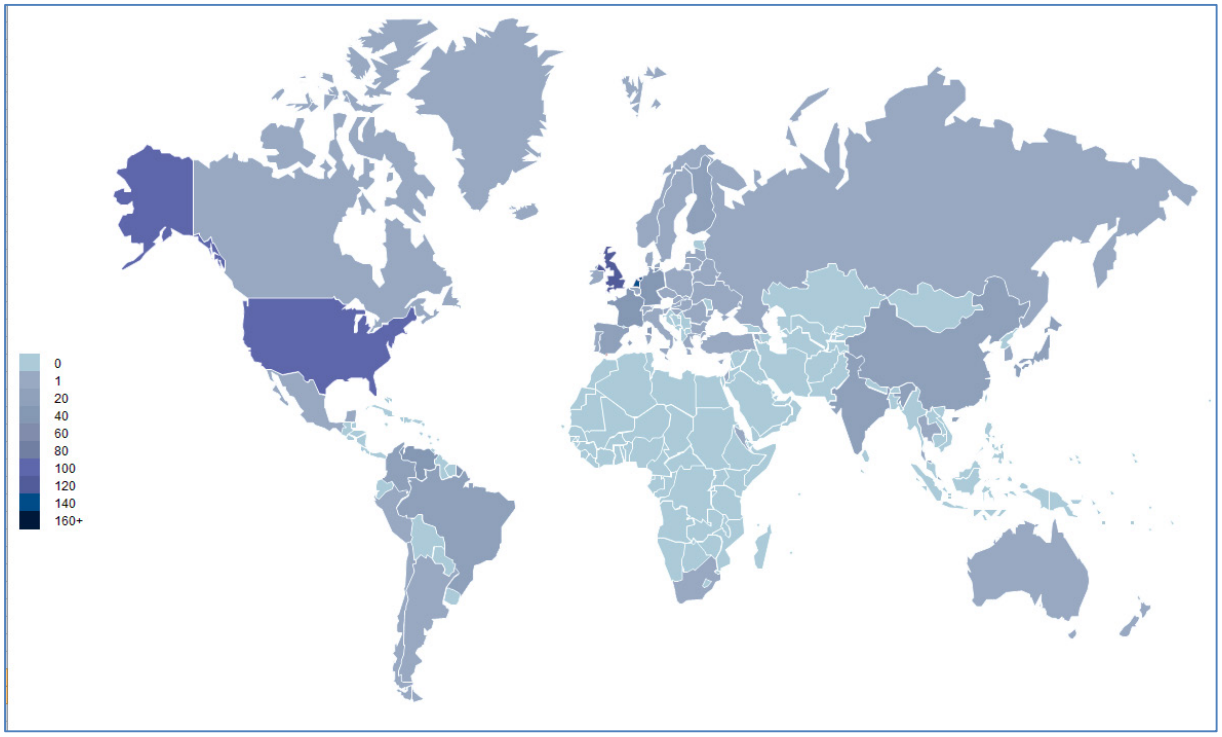
A collection of methods was deployed across the foresight studies reviewed. These typically involved desk review of documentation, face-to-face consultation with experts to develop key outputs and sometimes expansion or refinement of these through questionnaires using multiple rounds in a DELPHI approach. The focus of most activity was on developing a narrative about the future, often expressed as scenarios, stories, plans or roadmaps. Outputs also included trend analysis, and mapping of links between possible outcomes and key factors identified during foresight processes.

2.2 Geographical range and subject area of studies included

The literature review highlighted some key, recurring themes and factors in successful foresight studies. The foresight exercises ranged across various sectors and disciplines, and covered a very broad geographical selection of countries. This section outlines the studies considered and mentioned explicitly by the papers reviewed, the impacts achieved and noted, and the various foresight methods used.

[1] https://osha.europa.eu/en/tools-and-publications/publications/reports/scoping-study-for-a-foresight-on-new-and-emerging-osh-risks-and-challenges/view

Figure 1: Number of foresight studies covered, by country

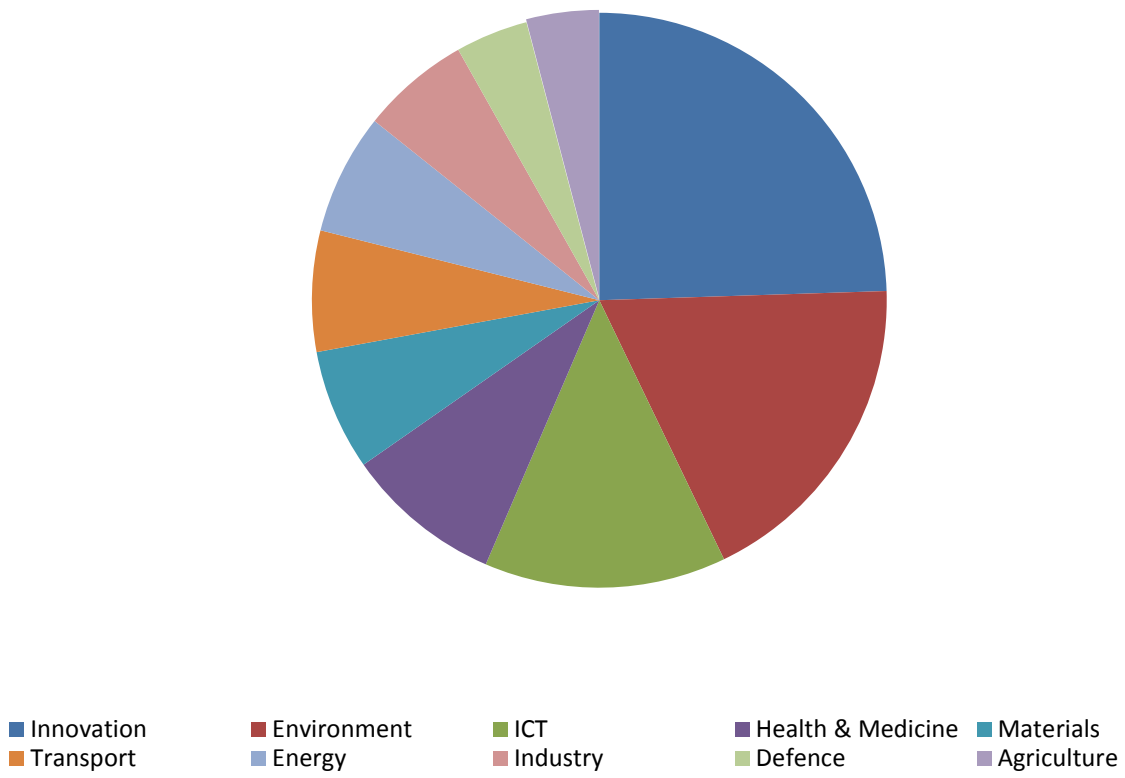


As the figure above shows, the literature reviewed considered foresight exercises from the USA, the Netherlands, and the UK the most frequently. Emerging economies among the BRIC nations (Brazil, Russia, India, and China) have been assessed, and coverage is reasonable in European countries and the South American nations. On the other hand Africa, the Middle East, and Central and South East Asia have undertaken few evaluations and reviews of foresight activities, although the use of foresight studies is growing, particularly relating to energy, food, and water security (Ayadi and Sessa, 2011).

Figure 2 below outlines the number of studies touched upon in the literature and the sectors in which they are relevant. Studies are grouped thematically into ten broad subject areas based around their aims, goals, and the participants and stakeholders.

Of the 147 studies covered by items included in the literature review, just under a quarter focussed on innovations in science and technology, with a prevalence of national foresight exercises and a wide range of stakeholders engaging in technology foresight. This was noted in the literature at some length, with a general trend of undertaking technology foresight rising since the early 1990s (Butter et al, 2009). Technology underpinned most foresight studies, with technological advancement and innovation anticipated to drive much future change. Another significant subject area was environmental issues, with just under one in five foresight exercises considering future environmental change. Information and communication and developments were linked to technological innovation, with increasing computerisation and internet development changing future scenarios in a number of sectors. Scale of the studies also varied, with evaluation of foresight activities being conducted at continental, national, and municipal levels. In some studies there was an overlap between categories e.g. science, technology and innovation and ICT. The categorisation is based on the primary focus/theme of the study.

Figure 2: Type and number of studies considered in the literature



2.3 Types of impacts achieved from foresight studies

Numerous and diverse impacts and outcomes are highlighted in the literature. This section groups impacts thematically and notes which are more prevalent than others, and which are more commonly seen as successful. Impacts have been grouped into four types: policy, stakeholders, research, and wider impacts. Conceptually, impacts can be broken down into “aggregation” and “translation” (van der Meulen, 1999:20), where aggregation brings together multiple actors and interests via stakeholder impacts and translation focuses more on research and policy, with impacts evident in research strategies and projects. The most comprehensive overview of common, successful impacts in foresight was provided by Havas et al (2010:95), and combined with the findings from expert interviews, these are outlined in Table 2 below.

Table 2: Common impacts from foresight

	Research contractors	Commissioners	Policy users and stakeholders
Before commissioning	Spread adoption of foresight methods into EU projects, stimulating future expansion Relationship building with subject experts	Greater awareness of foresight	Greater awareness of foresight
During research	Learning new methodologies, issues, techniques Stakeholders work more collaboratively Invested in in-house skills Fuller approach to quantitative data collection using wider range of sources and analytical techniques due to stakeholder engagement and influence Production of a 'live' reporting document that could be amended and updated by stakeholders, researchers and client *Formation of networks of actors in the policy field* *Stakeholder views are more clearly expressed and better recognised* *Foresight skills and understanding developed in a wider context*	Organic process of developing methodology over the course of the project *Makes explicit hidden agendas and obstacles to more informed, open and participatory processes to governance* *Individual learning about issues and policy options* *Appreciation of stakeholders' views and established common understanding* *Building systemic awareness of prospective environmental changes and policy responses*	Development of dedicated activities within government to co-ordinate policy Development of support measure to address needs of business sector and academia Closer working between policy makers and those affected by policies. Improved connections between actors in the system *Individual learning about issues and policy options* *Appreciation of stakeholders' views and established common understanding*
On delivery	More work subsequently commissioned Identified barriers in to improving foresight methods	Increased trust in the research organisation	Increased trust in the research organisation Increased networking New methods adopted

	Research contractors	Commissioners	Policy users and stakeholders
	Open discussions about how funding for research can be sustained *Collective learning processes initiated* Better able to use foresight and participatory approach in wider research	*Adopt long-term perspectives and systemic thinking* *Develop common perspectives on the future*	*Policy options identified* Embedded foresight into national research and innovation strategy *Swift learning and implementation of new policy* *Building forward-looking activities into internal processes*
1 year after delivery	Improved technical ability Engagement in international foresight activities *Integration of new actors into foresight communities* *Foresight results embedded in teaching/learning curriculum of education providers*	*Increased recognition of a topic area* *Views of stakeholders clarified*	Wider remit for research organisation's work Foresight research centre developed Exposure of foresight to larger policy community and to wider stakeholder groups e.g. young people More participative approach to foresight activities. *Increased policy coherence* *Policy change* Continued strong relationships between stakeholders, researchers and policy makers
5 years after delivery			Policy support and funding for industry targeted in foresight study
Now			Continued effect on policy makers mainstreaming use of foresight

N.B. Italicised text shows insights from literature review

One interviewee noted that a lack of impact assessment makes outcomes of foresight projects difficult to observe, and impacts are often unclear. Impacts are also difficult to quantify, as there can be both indirect and direct impacts, and projects stimulated by foresight that take place after the project's completion could be an unforeseen impact that is difficult to measure. Another gave two concrete examples of impacts in Germany. In the first, space travel foresight in the 1960s consisted of an impact study that resulted in Germany supporting the creation of the European Space Agency rather than pursuing its own space travel programme. The second is a Baden-Württemberg project that researched biotechnology, and resulted in better education and public information about ways in which biotechnology can be useful and marketable. Baden-Württemberg now has a large biotechnology industry that was "unthinkable" before this exercise.

2.3.1 Policy impacts on process, priorities and policy legitimacy

Interviewees reported that the way in which foresight results have been used varies by project, client, and sector, although some felt that dissemination could be widened. The impact of foresight helped reframing of issues and has helped develop new methodologies such as actor network theory and multilingual meta-analysis. A common benefit identified by interviewees was a 'snowball' effect, where foresight projects led to further meetings to develop policy. One interviewee noted that use of results can persist for a considerable time after a foresight project ends, and linked this to the wider proliferation of "citizen scientists" among non-foresight specialists who developed their own projects as a result of taking part in foresight research. Academic and professional clients in particular have made beneficial use of foresight work, with one example from the UK National Health Service adopting recommendations from a foresight exercise and conducting foresight training to embed internal capability.

Levels of policy impact varied, and affected numerous levels of policy makers, from municipal and regional through to supranational bodies. One study considered the FORLEARN foresight exercise in the EU (Da Costa et al 2008). The impacts highlighted in this paper are stated below. We should note that with regard to the last point, this is not a unique attribute of foresight compared to other types of research.

a. policy impacts, including informing policy
b. facilitative policy implementation
c. embedding participation in policy-making
d. supporting policy definition
e. signalling that policy making has a rational evidence base

The authors state that since the 1990s the policy benefit stressed by foresight practitioners has shifted from the delivery of information on future developments as a basis for priority setting to helping key stakeholders organise new ways of working. This has led to an increasing emphasis from some foresight practitioners on the relevance of the foresight *process* compared to the tangible *products* of the exercise. This change has been prompted by the "facilitative policy implementation" angle mentioned above. The stages of policy development that foresight can affect are policy learning, agenda setting, and effective actions. Because these changes occur gradually over various phases of the policy process the impact of foresight is more difficult to pinpoint, so it can be underestimated.

A second element of policy that foresight can affect is the recognition of mutual influence and coherence of policy areas. Creating better recognition, coherence, and informed policy was evident across numerous foresight studies. The Greek national technology foresight programme is an example where stakeholders stated that policy was more coherent and better informed as a result of the foresight process (Amanitidou, 2009). This policy coherence lent itself to increased recognition of certain topic areas, which was felt broadly across sectors and nations. Calof and Smith (2012) noted that foresight led to recognition of the importance of green technologies and ageing in Japan, sustainability in South Africa, new strategies in veterinary education in the USA, nanomaterials in Russia, public health in Thailand, and science and innovation in the UK. One expert research contractor spoke of a foresight study into biofuel in Malaysia for the private sector that introduced the topic for a wider audience due to

its success, providing benefits in knowledge and communication and achieving this while delivering value for money for both the companies involved and the government.

Foresight can also affect broader cultural changes to the national policy landscape. Amanitidou (2009) found this in Greece, where the transparency and shared information in foresight studies provided a beneficial change to Greece's culture of "behind closed doors" decision making, and this illuminated the nature of decision making in Greece and created public debate. This was also found by Hilbert et al (2009) in a transnational foresight study in Latin America and the Caribbean, where inter-governmental agreements were discussed and decision makers had to justify publicly why certain priorities and themes were rejected in favour of others.

A finding which emerges overall from the research is the benefits of bringing a group of stakeholders together in shaping policy. This is typically identified as resulting in positive changes in subsequent policy processes, rather than outcomes (Chauke Nehme et al., 2012; Chrystall and Cleland, 2013; Rijkens-Klomp, 2014). It also embeds new skills and new ways of thinking and can foster subsequent co-operation among expert and non-expert individuals (Chrystall and Cleland, 2013). The value of bringing large groups of people together was identified to lie in helping to generate conversations between people who would not normally encounter each other, and in instilling new ways of thinking. For example, as a result of a large scale foresight exercise, foresight became accepted as the primary method for developing science and innovation strategy in New Zealand (Chrystall and Cleland, 2013). A number of studies also point to the value of awareness-raising of the issues under discussion among a broad group of stakeholders and policy makers (de Lattre-Gasquet et al., 2003).

One point of caution suggested by an expert research contractor is that ultimate impacts of foresight are generally very long-term and are therefore difficult to measure. While the ideal case for policy makers is that they implement a policy that leads to a desired impact, policy *change* is a more common impact. The interviewee noted strong policy impacts from foresight exercises in Russia and public sectors as well as corporate impacts of studies for companies such as General Electric in the USA. One interviewee gave the following insight, arguing that being seen to take immediate action was perceived as more valuable than tackling long-term issues:

"You are rewarded not by putting uncertainty into a conversation but by stepping up in a crisis".

2.3.2 Impacts for stakeholders: policy influence, learning and networking

Evidence on stakeholder attitudes towards foresight is mixed. Some interviewees reported positive effects, and among stakeholders with closest contact, projects were well respected, and viewed as methodologically robust, although few concrete impacts were identified. Having academic expertise in foresight also helps, as it encourages take up of leading edge methods. However, interviewees noted a widespread "weak foresight culture" meaning that some wider groups were still dismissive of foresight projects.

One stakeholder noted that entrenched negative attitudes which inhibited use of foresight findings could be tackled through stakeholder education, communication and making projects and methods as inclusive as possible so that the work was understood and individuals perceived some ownership of the results. This was a particular problem for researchers who were entrenched in disciplines which do not attach great value to foresight.

As well as impacts on policy, the foresight activities had impacts for stakeholders involved in the policy process. It has been noted repeatedly in the literature that elucidating stakeholder views and revealing any policy hidden agendas is helpful, and makes the stakeholder influence on policy more transparent. This transparency led to better informed decision making, and the involvement of a variety of stakeholders increased prevalence of reasoned consensus between organisations that had previously been unidentified or non-existent (Weigand et al, 2014). This consensus was heightened in three ways: through increased networking, engagement, and participation of stakeholders for numerous actors, who generally responded well to participation in the foresight studies.

The networking aspect and benefits are outlined by Schartinger's study of an anonymised large foresight project (2012). The study analysed networks that formed over four forums in the foresight process, and

the results of this certainly suggested greater information flows and potential for collaboration, and this was supplemented by qualitative interviews where stakeholders listed learning from others and networking as the main positive impacts of them personally attending the forums. Another success factor is the increased engagement at various levels of the chain, with Calof and Smith (2012) noting increased engagement by stakeholders and policy makers at varying stages of the foresight exercise, leading to more nuanced and better informed research findings. Alongside this engagement, positive aspects of incorporating stakeholders perpetuated increased participation and a wider involvement in the project. A study of the Turkish national foresight programme outlined the following as the main positive outcomes of the exercise (Daim, 2009:31);

- Participation: broad participation from public, private, and voluntary sector, as well as universities and policy makers, was seen as a positive, stimulating discussion with input from numerous interest groups. This links in with responses from interviewees, who suggest that there is a general consensus that strong stakeholder links (especially with universities) is positive. An interviewee noted that often there was an onus on the client to take control, driving the research process in ways that may not have occurred under different methodologies, which demonstrates the participation was proactive rather than merely taking part in consultations or meetings.
- Co-ordination: one interviewee mentioned that a large-scale technology foresight initiative in Russia faced a barrier due to concerns about differing interests in public-private interactions, so the interviewee in question brought in expert panels and key experts to bolster the evidence base and mediate between the two, increasing co-ordination and co-operation.
- Public awareness: one of the project goals was to highlight the importance of science and technology for socio-economic development to the public, and the increased policy consideration of science and technology enabled this.
- Social commitment: being seen to be promoting sustainability and devising future technology strategies demonstrates long-term societal commitment.
- Future focus: as above, placing foresight exercises in a context of strategy and development gives foresight a strong future focus.
- Individual learning: using diverse methodologies within the foresight programme, coupled with the collaboration of stakeholders, greatly promoted individual learning.

This demonstrates the possibility of using foresight to integrate the perspectives of stakeholders at all stages of the exercise and the benefits that this brings to the policy process.

2.3.3 Impacts on research – widening knowledge, increasing collaborative working and overcoming short-term perspectives

Foresight is noted to have an impact on research communities, creating new knowledge and stimulating further research. A general theme in the literature is that as more foresight studies are conducted, each successful foresight study creates credibility and inspires further foresight studies. Interviewees also endorsed this view, with the belief that academics had been well consulted and involved in designing new methodologies for foresight. Georghiou and Keenan (2006) noted that the broad, scoping nature of foresight studies promoted closer collaboration and greater interdisciplinarity.

Overcoming short-termism in research through foresight was a benefit noted a number of times. Greater collaboration in Hungary was welcomed by the research community who saw evidence-based policy often adopting an increasingly short-termist, narrow disciplinary framework (Georghiou and Keenan, 2006). Short-termism remained a concern for some experts because the impacts of foresight are often not seen for many years and clients are sometimes considered conservative in the time frames they wish to focus on.

Another positive impact noted by one expert research contractor was the learning process that occurs, initially for the client but also for the researchers due to use of participative foresight methods. In many cases, the clients have expertise which provides a valuable repository of information that the researchers can draw upon. This joint learning process adds value to the project, which one expert research contractor noted was crucial in an era of decreased funding. One example was given of a UK

study into obesity that promoted good practice across cross-cutting stakeholders in various sectors, providing wider benefits than anticipated.

2.3.4 Broad policy impacts – innovation and learning to support decision-making

Some impacts of foresight studies are general, across policy, stakeholders, research, and the wider public, and these cross-sectoral linkages are prominent features of foresight studies. One study notes that foresight promotes greater STEM (Science, Technology, Engineering, Mathematics) awareness for numerous parties, with politicians, the media, and scientists becoming aware of innovations and work in the field (Rongping and Zhongbao 2008). Another points to these "intangible" gains, describing the most important as collective learning, better and deeper collective understanding, better reasoning to support decision making, a culture of looking ahead, and collective commitment to joint courses of action (Chauke Nehme et al 2012:246). Foresight, using a wide range of stakeholders and an interdisciplinary approach, can provide implicit benefits in the policy learning process.

The other main general impact of foresight, tied to a general increase in collective learning, is an improvement in overall innovation in research and policy making. A benefit of foresight is that foresight exercises tend to disproportionately affect individual researchers and smaller stakeholders who can benefit from this collective learning (Yoda, 2011). This improvement to innovation has been well documented, with Daheim and Uerz (2008) noting that in a survey to corporate stakeholders, 58% of survey recipients believed that improvements to innovation were facilitated by foresight, with 88% seeing improvements in strategic decision making and 65% seeing foresight as a highly effective "early warning system". Foresight then can promote general, cross-cutting improvements in innovation and learning. Three examples of the policy impacts of foresight projects are given in the tables below. The first and second provide examples where substantial policy impact was evident and the third example shows a project where the results were equivocal.

Table 3: Example One: Future Vision Strategy foresight project in Brazil

Authors: Chauke Nehme et al (2012)	
Foresight Study	FINEP Future Vision Strategy, 2007-2010
Client	Brazilian Ministry of Science, Technology, and Innovation
Location	Brazil
Sector	Energy, Water Resources, Biotechnology, and Nanotechnology
Methods	Expert interviews, identification of key themes, mapping of national capacity, benchmarking, Delphi, and expert panels.
Findings	Policy outcomes were: ▪ The creation, expansion, mobilization and maintenance of networks, as important as the tangible results, such as reports or recommendations. ▪ Shared sense of commitment to a desirable future established by different stakeholders. ▪ Changes in attitudes and mind-sets helps people think about long-term issues and better prepare to face the challenges ahead. ▪ The establishment of a foresight culture within organisations or industries, which could result in a better decision-making process. Outcomes differed for the government, private sector, and academia. For the government, learning occurred about timings, as governments are often short-sighted, which does not sit well with long-term foresight, and greater consideration of evidence is needed before implementing policy. For private sector stakeholders, greater competition provided better engagement, and

	foresight promoted a healthy "outside the box" thinking in numerous private sector organisations. For academia, the main gains were a more robust output due to the long-term nature of the project allowing greater time to consult and develop thinking, and increased interdisciplinarity due to the involvement of diverse stakeholders.

Table 4: Example Two: Dutch Foresight Studies

Authors: van der Meulen (1999)	
Foresight Studies	▪ Technology Options for Environmental Problems (TOEP); a study on identifying possible technological options for environmental problems ▪ Advisory Council for Research on Nature and Environment (Raad voor Ruimtelijk, Natuur- en Mileu-Onderzoek; RNMO); a long term perspective of the Advisory Council for Research on Nature and Environment ▪ Sustainable Technology Development (Duurzame Technologische Ontwikkeling; DTO); A programme trying to initiate Sustainable Technological Development ▪ Foresight Steering Committee (Overlegcommissie Verkenningen; OCV) The foresight process of the Foresight Steering Committee
Client	Various governmental departments and tri-partite bodies; all linked together through the Dutch Government's National Environmental Plan
Location	The Netherlands
Sector	Environment
Methods	Expert panels, interviews, and scenario building
Findings	▪ TOEP: Generated a priority list of nine technological options to be promoted as part of the Environmental Policy Plan. ▪ RNMO: Concluded that technological solutions would not suffice as "more is needed than scientific knowledge and technological skills alone for definitive steps in the direction of sustainability". It proposed six main research themes, elaborated in 35 specific recommendations. ▪ DTO: Because sustainable technological as a research theme has risen in priority lists since the start of the programme, the government has decided to fund a second period of research. ▪ OCV: Identified ten research themes that should be developed in order to meet challenges, and had a major impact on the governmental science policy; the 1997 Science Budget in which government announced its biannual strategy adopted most of the priorities.

Table 5: Example Three: New Zealand Foresight Project

Authors: Chrystall and Cleland (2013)	
Foresight Study	New Zealand Foresight Project, 1998
Client	The Ministry of Research, Science and Technology (Te Manatū Pūtaiao)
Location	New Zealand
Sector	Science and Technology
Methods	Scenario Building

Authors: Chrystall and Cleland (2013)	
Findings	The NZFP stimulated conversation, and "brought people together" (p.309), especially disparate scientific groups who could now meet and work together. It highlighted the importance of strategy in the face of uncertain futures, and lifted the profile of science, bringing scientific procedure and practice to an audience that often do not consider it. This was facilitated by the scheme's open platform nature, bringing together disconnected stakeholders. The openness was reflected in meetings held between scientists and non-scientists, politicians and non-politicians. It is noted that one of the failures of the project was the disconnection between the undertaking and its subsequent implemented outcomes. These failures are broken into five subsections: ▪ Implementation: lack of implementation meant the strategizing was ultimately ineffectual. ▪ Lost in Translation: the strategy submissions were too detailed and specific for policy making, which produces short, succinct documents that were unsuitable for the amount of highly technical information. The outcome statements from policy makers were vague and widely derided. ▪ Managing expectations: expectations in the project were too high, so there was a lot of disappointment in the results of the project. This had a scarring effect on foresight in New Zealand, with the project carrying a bad name for some years. ▪ Scope: two issues. The temporal scope was too long, and the project felt bloated, but the disciplinary scope of science and technology was too restrictive. ▪ Blind spots: the example given is a lack of consideration for the agricultural sector, demonstrating a need for a holistic approach to considering science and technology in foresight.

Interviewees reported that the aims of foresight projects were mostly achieved, although some with greater success than others. Those that reported success pointed at evidence of prompt delivery, a well-developed plan and report, the achievement of expected impacts, and in one example a full reframing of a policy debate from a health-related focus to a much more inclusive set of considerations about poverty. One project example was viewed as less successful, as it failed to find a solution to its key research question and did not engage policy makers or change funding structures in a way the interviewee thought would have been beneficial.

The impacts of foresight studies were often wider and deeper than expected, and their participatory nature and engagement of stakeholders promoted enthusiasm and well developed networks. One particularly well-developed foresight scheme is the Spanish national action plan for science and technology, which is widely recognised as a positive framework for the scientific community and instrumental to funding scientific institutions. Another study in Romania produced recommendations which were adopted by the government in its new strategy for research and development and innovation including areas in which funding was to be concentrated and also developed strategies for national bodies. This influenced the organisation of research funding and had an impact on publications. Elsewhere, outputs which showed knowledge maps of relationships between stakeholders were helpful in illustrating their position within a sector and broader national industrial systems.

Another wide impact of foresight studies is that they can instigate organisational and cultural change. Many stakeholders noted that doing foresight was the best way to get policy clients interested in future foresight studies, which opened up new opportunities and ways of thinking for policy makers. As well as new projects, many interviewees spoke of workshops, reports, and presentations triggered by an initial foresight study. An example of this was given by one interviewee who noted that the UNESCO "KnowLab" – a futures workshop attended by delegations from around the world – was adopted in the same format on a national scale by Innovation Norway. Foresight also helped challenge assumptions and provoke wider thinking; one interviewee gave the example of a foresight study conducted into the future of HIV, which promoted broader debates about the future of poverty as a whole, creating a much wider range of thinking.

Evidence on foresight influencing future research is mixed. In recent years, budgetary constraints and a lack of finance limited development of subsequent research, and whether foresight findings are acted

on was often determined by organisational experience and perceptions of the quality of the foresight study. If the client was engaged and content with the research process, and satisfied with the final outputs, they were more likely to put the findings and recommendations into practice.

2.3.5 Challenges in measuring impacts – the need to build in metrics within the research process and track outcomes afterwards

Measuring the impact of foresight studies is more challenging than some other types of research because of the long time span over which studies explore the future. One interviewee suggested that five to ten years as a reasonable period after the completion of the project as a suitable period for investigating outcomes, but many projects are simply not tracked over such a long time after completion. This is especially true of foresight commissioned for policy purposes, where short-term perspectives linked to political and electoral cycles may mean that the results of foresight are discarded if and when governments change. Where impacts are measured, the outcomes usually assessed were changes in financing, government policy activities, and research output.

Most studies did not evaluate or compare outputs generated from different types of methods, because most of the items were retrospective analyses of individual or sometimes groups of studies. These were not conducted with the aim of assessing which component parts of foresight activities were more or less effective than others or comparing the effectiveness of types of foresight methods. One study noted that a Delphi questionnaire was effective due to its perceived coverage, brevity, accuracy, objectivity and feasibility for participants to respond (Rongping and Zhongbao, 2008). Another noted the importance of using online surveys to involve stakeholders where travel distances were large so travel costs and time might limit face to face participation (Hilbert et al., 2009). Others noted a need to make sure outputs contain concrete recommendations where this is an agreed objective (Yoda, 2011).

One interviewee stated that “there is very little that can be found in terms of how to measure the actual impact”, noting that clients often do not consider evaluating long-term consequences of foresight activities. There is evidence from this in a recent project commissioned by a European agency, where one interviewee stated that “the client did not request that the impact should be measured”. Some interviewees noted tensions between what the client wanted to measure and what was feasible, with difficulty in presenting definitive figures on future outcomes. Additionally, measuring impact requires political leadership that is committed to using the findings in a way that enables tangible outputs to be assessed, otherwise impacts become very difficult to measure.

Interviewees suggested different ways of measuring impact and presenting outputs based on these difficulties. One idea was to outline a timetable at project inception, with impacts and how to measure them specified early and comprehensively. Another was to instigate a “snowballing effect” by creating a stakeholder network and encouraging them to take ownership of the project and undertake future research of their own accord to ensure impact is achieved, even if not through the research commissioners themselves. Another way is to reframe foresight itself; one project used foresight to create a “reservoir of ideas”, which gave a focus outside of measuring immediate impacts, which was novel and innovative. An internal project review was later built in, and independent reviewers measured outputs (although not impacts) at the end of the project. During a Futures Literacy “KnowLab” exercise on the future of science in Brazil, a survey of participants was carried out before and after participation in a workshop to assess prior understanding of foresight and to capture learning and other benefits that occurred (Rhisiart et al., 2014a). One interviewee noted that a good method of evaluation is to conduct a feedback analysis, where expectations are collected at the outset of the project and then compared with the actual outputs at its completion to assess effectiveness. This can be useful to gauge initial impacts but does not capture longer-term policy change or development which is often the target for foresight studies. Another suggestion was to build an impact assessment exercise within the foresight project itself to ensure a legacy of options for measurement was left.

Sometimes impacts were more tangible such as the creation of new research streams or centres, but it is important to continue the measurement process to assess what new activities subsequently deliver against the objectives set. Two interviewees noted that clients wishing to raise the profile of their work used citation rankings in national, international and social media to track how much attention commissioned foresight research outputs were attracting. While this is of value in gaining wider public

attention, interviewees did not make a connection between those projects which gained high impact through media citations and those which made most impact on policy. These kinds of foresight exercise were intended to provide new thinking and stimulus for policy rather than be used directly to answer a specific policy question, so policy impact is not an entirely suitable measure of impact.

Among those foresight studies seeking direct policy impact, clients noted that using empirical findings from a well-respected research organisation helped provide legitimacy to subsequent policies. Foresight findings sometimes helped to instil a change in culture and a reframing of policy debates, which changed how actors engaged in policy making. Many interviewees noted that the new networks and consortia, learning, and dissemination that occurred after the exercise would not have occurred without the initial foresight activity. A consensus emerged that foresight studies had a wider than anticipated reach, such as one European Commission project leading to a full European Security Strategy Review. One interviewee suggested that projects established as a result of a foresight exercise were instrumental in job creation.

2.4 Characteristics of successful studies and factors affecting perceived success and impact

Evaluating the impact of foresight studies is challenging. Reviews of foresight studies have concluded that few evaluations have been conducted, mostly in a 'fragmentary way' (Poteralska and Sacio-Szymańska, 2013, p.2). Evaluating foresight studies is inherently difficult because of measurement problems such as the time lag between project and results, other influences which may affect policy making, and the perceived relevance of foresight studies to the outcomes they are trying to influence. Among the studies reviewed, a number of foresight projects were found to lack anticipated impact, and some reviews found no consensus between stakeholders (Meissner, 2012; Chrystall and Cleland, 2013). This suggests differing perspectives on what constitutes success.

The major factors judged to contribute to the success of studies commonly centred on the quality of stakeholder engagement, including the range and number of people engaged, effective management of the process, education and engagement of clients and policy makers, tailoring of foresights to meet client needs and developing impactful outputs. Various important aspects of this process identified are discussed in the sections below.

Studies which were less successful were more likely to struggle due to contextual factors. These include challenges such as lack of political ownership and changes in leadership among the commissioning body which blocked the implementation of recommendations (Daim, 2009). This suggests that picking the timing for undertaking a foresight judiciously can contribute to its degree of impact, and underlines the need to maximise involvement of key actors where possible coupled with the need to align the foresight project process with the demands of the policy life cycle. In addition, projects in which foresight was implicitly endorsed as a method, such as those requiring expert participation and which were dependent on stakeholder support for policy implementation, were more likely to gain attention and impact. This was sometimes linked to backing of key sponsors, such as European funding streams, for use of participatory methods.

2.4.1 Volume of expertise

A key feature of foresights which is deemed to have contributed positively, regardless of how the overall exercise is rated, is involving a large number of experts (van der Meulen, 1999; Calof and Smith, 2012). This is viewed as helping to generate high quality insight through harnessing the creativity released through interaction of experts. Examples of studies include one which used 700 people in a series of panels as part of a large scale technology and innovation study (Amanitidou, 2012) and another which involved 3000 people (Chauke Nehme et al., 2012). The advantages of involving such large numbers include proving the research is thorough and therefore improving its credibility and improving the transparency of the research on which decisions are founded (Amanitidou, 2012). These large scale exercises typically produce a lot of information from a single source.

2.4.2 Involving multiple stakeholders with diverse characteristics

Some writers on foresight stress the need for breadth and diversity of participants. One study notes the importance of bringing together people from different departments, grades and specialisms as helping to introduce different views (van der Meulen, 1999), avoiding a tendency to reach consensus and helping to make assumptions explicit through open dialogue (Weigand et al., 2014). These types of features contributed to ensuring people's voices were heard at all decision making levels so policy makers were acting upon information received from a variety of sources and disciplines (Chauke Nehme et al. 2012). One interviewee noted that an online DELPHI exercise examining sectoral funding priorities was highly successful in engaging 30,000 people, and the systematic analysis of the results produced a comprehensive account of expert views. In addition, using a broad participation base is argued to bring people together with little previous contact, strengthen connections between different stakeholders and sometimes different government departments and help bring public and private sector actors together. This was identified as particularly important for topic areas such as science and innovation, which are dependent on the private sector to deliver government objectives. This will also therefore be potentially applicable to OSH.

A variety of methods are used to engage stakeholders ranging from face to face, online and written consultation techniques. One interviewee gave examples of workshops being universally popular, with increased engagement and stakeholder ownership generated from workshops transcending cultural boundaries and seeing positive effects in Norway, Colombia, and the Philippines. Networking and developing relationships was important, and maintaining healthy relationships was regarded as crucial to the success of foresight projects. Clients who do all they can to facilitate links and gain stakeholder involvement were found to reap benefits in the breadth of stakeholders participating. Contractors need to be prepared to draw on their own networks or create new ones to ensure an effective network to capitalise on the maximum range of expert inputs.

Within the range of people contributing to foresights, some authors noted the significance of involving individuals with particular characteristics. These include key actors with influence in the policy formation process (van der Meulen, 1999) and the representation of key organisations (Daim, 2009). One analysis extends this further to involving stakeholders more deeply in the foresight process by framing foresight as a 'co-produced service activity', rather than as a project delivered to a client by a contractor (Miles, 2012). Interviews confirmed that stakeholders had an important influence on the research output as it generated strong experiential knowledge and helped the researchers as "operative workers" on the project. One interviewee said it was important to outline potential experts early to clients, as it shows a contextual awareness and helps to secure valuable engagement.

Depending on the purpose and focus of the foresight, some research has identified a tendency for over-representation of public sector organisations and academics, with more small- and medium-sized enterprises (SME) needed (Daim, 2009). This also needs careful handling as some studies note the difficulty of co-ordinating the contributions of groups of people which are highly diverse, as outputs can be inconsistent, for example in studies relying on panels of people working in parallel to develop foresights (Daim, 2009).

Studies of exercises regarded as less successful note the lack of involvement of a range of actors with differing perspectives (Weber et al., 2009). This reportedly resulted in less creativity in outputs and a tendency to avoid controversial topics and long-term problems. One expert pointed to the difficulty of getting commitment from business stakeholders for time-consuming foresight workshops. A number of studies caution that involvement of large numbers of people makes such exercises costly, but evaluations of some foresight projects have concluded that the best-resourced and consequently most expensive projects have had most impact (Poteralska and Sacio-Szymańska, 2013). It is possible that project scale influences perceptions of value for money among policy clients, who may be expecting an output to make an impact proportionate to the involvement of several hundred people.

Internet and social media tools have been adopted by a number of organisations to support their foresight activities. One Finnish organisation has developed a foresight crowdsourcing model to collect weak signals of change from a network of employees around the world (Hiltunen, 2011). This approach has reportedly improved both the quality and impact of the foresight process. A government-run foresight unit in Brazil has used crowdsourcing principles to set up open innovation challenges (Bason, 2010). These examples illustrate the potential of crowdsourcing and social media tools to engage with diverse stakeholders within foresight processes and through this to enhance policy impact.

2.4.3 Education of clients and participants about foresight methods

Studies differ in how far they advocate education of policy makers about the function and purpose of foresight versus positioning foresight firmly within the constraints of the policy making context (van der Steen, 2012). Those which are most successful appear to have been developed in a context which is at least receptive and open to using foresight approaches, while others which were less successful have failed to meet policy expectations for definitive answers to policy questions. These may reflect challenges in both how studies are conceived but also differences in expectations and understanding of what foresight projects are typically designed to achieve. A number of studies recommend an education element in the initial phase of a project to brief policy makers on foresight techniques, their possibilities and limits (Amanitidou, 2012). One example of a reportedly successful foresight in the FOR-LEARN online case study of Manchester as a Knowledge City noted that all the participants were familiar with foresight methods and received detailed briefing materials in advance (FORLEARN, undated).

Such education may involve the policy makers learning from previous foresight studies before commissioning new ones. One interviewee explained that when the research council of an EU country started undertaking foresight projects, they noted a long history of work in the agricultural sector from abroad, so focussed initial scenario building exercises in this sector as it had been previously tested and accepted in other places. The nation could therefore build methodological capacity and expertise in an area with an existing frame of reference, and compare their projects to those already carried out in similar settings before moving into new topics with less prior research. In a study undertaken in the USA, a series of “known drivers” was discussed and changed in the early stages of analysis, which gradually developed a common set of new scenarios. Similar work occurred in another EU country, which used earlier projects to gauge utility and feasibility. Learning from previous track record, then, can be seen as a success factor in developing foresight exercises.

Building a sense of ownership of scenarios developed and foresight products can require development in foresight skills among policy clients (Rijkens-Klomp, 2014). There is often a tension between the perspectives of foresight experts who contest that the purpose of foresight is to illustrate potential options whereas policy makers are sometimes expecting definitive answers to questions about the future in circumstances where it may be difficult to predict outcomes exactly (Rijkens-Klomp, 2014). This points to the need for those undertaking the foresight exercise to have deep expertise and skills in conducting the work, and asserting and persuading the client of the robustness and value of the methods selected. One expert researcher felt that results of foresight feed into the policy process in the form of providing secondary advice, and that foresight provides a learning process for clients, who tend to lose scepticism as the project goes on. Others noted the importance of effective communication with civil servants and policy makers. A number of research contractors felt that participants in foresight workshops need to be open to the idea of dealing with uncertainties and willing to think beyond usual time horizons associated with work tasks. This can be assisted by providing them with short background materials to read in advance, and critically, by allowing them enough time to engage in scenarios during workshops.

A large number of studies which point to the need to engage policy stakeholders and key actors at an early stage in the process to ensure they are committed to the study (Calof and Smith, 2012; van der Meulen, 1999). This implies a need to determine the ultimate targets for policy influence as early as possible when designing the study (van der Meulen, 1999).

2.4.4 Making foresight relevant to client needs, client receptiveness and support

Reviews of the literature suggest that foresight results are most likely to be accepted where clients are ‘foresight literate’, trust the methods and process being used and are open-minded about using external ideas which may differ from existing accepted insights (Calof et al., 2012). There is also much besides education that research contractors can do to help foster client engagement, chiefly by ensuring that they have a detailed understanding of the client’s policy needs and objectives. This could be achieved by co-opting a client representative onto the foresight design team or by engaging a member of staff with previous policy and research background from the client organisation or department. One expert research contractor also noted that project aims can change and the research has to be adaptive and flexible as client’s goals change and the involvement of different actors can alter over the course of a project.

Interviewees pointed to the fluctuating status of foresight studies as having an influence on their perceived value which affected how much policy makers used the results. They noted that foresight studies have been conducted by organisations such as the OECD since the mid-1970s, corporate foresight activities gained attention through the work of Shell at the same time, and the European Commission and UNESCO have established centres for foresight and prospective studies. The backing of the European Commission was influential in the adoption of foresight methods for developing research and innovation strategies, for example, in new EU member states. All these institutions strengthened the focus on use of effective foresight methodologies and the importance of trained foresight specialists being involved at all stages, particularly if the research is being carried out in a consortium. One interviewee suggested that senior managers in policy bodies were increasingly seeing greater value of foresight studies.

For foresight activities to be successful, interviewees argued that client understanding of every stage of the project was extremely important. This involved frequent client contact and communication between client and researchers to ensure projects run smoothly. Contractors stressed that this communication must remain objective and dispassionate to maintain research impartiality, and that findings need to be communicated in a way policy makers can understand. Frequent interaction enabled problems to be resolved early, which can reduce costs in the long run and improve the quality and impact of foresight outputs. Contractors often pointed to effective examples of where researchers took on an advisory consultancy role to policy makers in helping to shape and frame the scope of foresight activities. This involved ensuring that policy maker attention is focussed on the most important trends and drivers, using contractors expertise to synthesise coherent future pictures and ensuring the time is invested in deep analysis of the most relevant issues. Where such close working relationships were more difficult to establish, this was usually due to the external influences of electoral cycles and policy constraints from governing bodies, government departments or supra-national organisations.

Other interviewees believed that foresight approaches are not well understood. One interviewee suggested that the research community working in the field could do more to reduce perceived ‘insularity’ in their approach, and tackling ‘invisibility’ of foresight studies and methods to non-foresight experts. Interviewees also pointed to the impact of financial crisis resulting in reduced funding and less interest in foresight work, possibly because of greater emphasis on tackling immediate economic problems. This had led to some countries reducing or bringing to an early end foresight activities commissioned by national government policy makers, commissioners of research not being able to resist existing pools of expertise being dispersed, and could in consequence, lead to reduced familiarity with the uses of foresight among future cohorts of policy makers. Research contractors argued that maintaining foresight literacy and promoting its value was important in ensuring this type of research maximised its potential impact on policy. Two noted that ensuring policy makers with an interest in quantified trends and projections supported the project was important and that building in a strand of this kind of evidence could help ensure the results were taken seriously. One project used data analytics to quantify results of reviews conducted and this gave legitimacy to the findings from the perspective of key policy audience targets. A further success factor here was making scenarios as customised as possible to the precise issues of interest to the policy audience and client rather than generalised visions of possible futures.

From the client side, having a high level champion is recommended as a strategy for ensuring maximum value is gained from investment in foresight (Calof and Smith, 2012) or some kind of steering group to gain authority, act as a sounding board and provide spokespeople (de Lattre-Gasquet et al., 2003). Other authors point to the key role of establishing mechanism for integrating foresight projects into the decision-making process of the client so the outputs feed directly into the activities of the organisation (Hilbert et al., 2009).

Perceived relevance of the foresight exercise to policy problems and a sense of the practical value that projects would generate for policy makers appears critical to engaging policy users. This was stressed by one of the experts interviewed who pointed to the need to give the questions used in foresight exercises a very clear focus which sets expectation of outputs. The interviewee gave the example of a study on flooding which had a very practical focus and goal of informing the identification of flood risks and development of flood defences. Similarly, literature notes the importance of knowing what kind of policy impact is expected, for example, distinguishing between facilitating implementation versus identifying priorities (Da Costa et al., 2008).

2.4.5 Managing the foresight process effectively: choosing the focus, communication and project management processes

Foresight projects were usually commissioned through an open competitive tendering process, and often the client typically specified foresight as the preferred research approach. One academic contractor stated that they were often approached in their personal capacity without tendering. In some cases consortia of organisations interested in a particular topic approached funding bodies directly. Interviewees stressed the importance of forming alliances and collaborative consortia to meet client needs. This imposed requirements for close joint working so that all the research organisations involved in the consortia followed similar methodologies, produced comparable data, and shared best practice to ensure the project was carried out coherently and successfully.

There are some specific design features of the foresight process which may be important to facilitate success in particular circumstances. These include crafting a challenging initial question to frame the process which should take a long-term perspective and unsettle participants, forcing them to open up the debate rather than narrowing the focus (Calof et al., 2012). It is critical that stakeholder/users commit to the central research question (Calof et al., 2012). Ongoing communication between client and foresight contractor is found to be essential (Calof et al., 2012), which can require dedication and persistence from the contractor to ensure the client gives sufficient attention to the project to ensure focus on the research question is maintained.

Other factors found to be important are efficient electronic sharing of documents among large numbers of participants and sharing of information between different panel members and the central co-ordinating team (Daim, 2009). A further insight generated on the basis of conducting foresight exercises is to start with a small pilot exercise to build competence among the foresight team and the client (Amanitidou, 2012). An intensive foresight exercise conducted over a 24 hour period noted the importance of a clear strategy for managing the discussions in terms of alternating between break-out groups and plenary sessions in order to capture feed-back from the whole group, strict time management and facilitators familiar both with the content and method (FORLEARN, undated). Lastly, one study noted the importance of making contributions to foresight exercises practical for experts to undertake. This reported that asking experts to make over 300 separate judgements in a Delphi questionnaire is not practical and required shortening (Daim, 2009). A more effective approach identified in a project to develop R&D and innovation priorities was to conduct a series of panel exercises which progressively narrowed the scope of possible investment areas so contributors applied increasingly detailed information to their decision-making. This ensured that attention was focussed on making choices at later stages of the exercise between high priority categories rather than devoting time to considering less promising options in great detail.

There was wide consensus among interviewees that communication is vital to projects' success. This had a number of functions. First in ensuring projects ran to time and delivered the required outputs, developing early project outlines and timetables were crucial to keeping up an effective chain of communication and ensuring delivery. This is particularly important in large scale foresight exercises which can last at least a year.

Second, open and frequent communication enhanced the consultative and participatory nature of the project, created a wider and more diverse network of stakeholders, and kept the client informed about project progress and any obstacles and barriers. Communication was especially important when numerous stakeholders were involved in a project, with interviewees noting that researchers, funding agencies, and clients occupy very different roles, so knowing each other's roles, responsibilities and lines of communication was crucial. Workshops and regular project meetings with face-to-face communication were regarded as an effective way of keeping partners updated and disseminating emerging findings widely, enabling alignment of all partners' activities. Interviewees suggested that maintaining strong client contact, keeping them involved and engaged and networked with relevant stakeholders, was a tangible value added impact that was particularly important because impact of foresight studies is often hard to assess in the short term. An empirical example given was the success of a workshop run for the UK health service, with the interviewee citing it as a productive and important forum for good communication between clients, stakeholders, and researchers. Additionally, one interviewee talked about how a representative of the client took up a secondment at the contractor

conducting the research, strengthening this link further. Other ways in which clients were involved included sharpening scenarios and altering them to include a particular focus of interest.

Interviewees pointed out that the research process for foresight studies can be fluid and dynamic, and policy aims and expectations may change during the lifespan of a project. This was partly triggered by learning and co-production, which help accommodate changing project needs throughout its duration. One project reduced the formality of its approach in response to stakeholder attrition, which was seen as beneficial in maintaining the engagement of those remaining.

2.4.6 Producing a variety of engaging and tailored outputs

While much discussion of foresight methods centres on the composition of groups involved, the format of the outputs developed can be important in engaging end users. Many outputs, both explicit and tacit, were noted by interviewees. Some pointed out that outputs came from the subsequent activities of stakeholders involved because foresight projects open a space for conversation that is novel, inclusive, and can be objective, and also can create new methodologies and changes in research culture. More concrete outputs include technical research reports delivered during and at the conclusion of projects, presentations, and workshops, as well as “action lines” which refer to policy decisions. One interviewee noted the need to vary the content of outputs depending on the type of client with conceptual issues being of more interest to international rather than national clients. More novel outputs were mentioned less frequently with some suggestions that this is an area for ongoing development of foresight projects.

Calof et al. (2012) argue that foresight work needs to generate a compelling narrative that is meaningful to participants and target users. There is also a need to produce an output that feels fresh, novel and will inspire policy makers to take action (Rollwagen et al., 2008). This can be achieved by using involving the key stakeholders in content development but also in ensuring that the language resonates with target users and overall package in which the foresight is communicated is visually engaging. Authors suggest that this should involve using ‘real world stories’ to make foresights come to life, quantitative data to back up qualitative data, and to specify key time points as a means of focussing end users on timescales for actions.

There is also an important translation process which is sometimes missing from foresight outputs where the raw scenarios or results of horizon scanning that depict possible visions of the future are then turned into actionable priorities and programmes (van der Meulen, 1999). Time pressures in conducting foresight exercises sometimes lead to less attention being paid to synthesising results and these elements of the exercise (Chrystall and Cleland, 2013). A balance is required in outputs between highly detailed reports which have limited appeal to policy makers and summaries which are too generic to be meaningful. One interviewee noted the added value of full-time communications expert to ensure effective dissemination of findings to a variety of outlets; stakeholders, media, policy makers etc. It was noted that engaging target users through outputs could be challenging, and framing of the project is therefore vital to ensure output and process are connected. Another interviewee noted that the focus of much foresight work on influencing high level policy makers brings a challenge of communication. Outputs need to use suitable language that speaks clearly to policy makers rather than academics.

Larger outputs need to be constructed with helpful signposting as a reservoir of knowledge for policy makers to dip into (Da Costa et al., 2008). Some projects which were highly transparent in sharing research outputs from every stage of the process found unexpected results in how these were used: one project loaded all research reports, briefings and outputs onto a project website and found that the raw results of an online DELPHI study were downloaded most frequently because it provided an easily accessible map of stakeholders’ views.

Interviewees shared several views on the best types of outputs and their purpose. One interviewee believed that outputs should attempt to emphasise policy implications and what the findings of foresight exercises mean rather than following a linear process built around the methods. Another interviewee asserted that the foresight community in Europe is too insular, with dissemination focussed within the foresight community, and wider dissemination deserving more attention. Institutional change, such as a change of government providing a new team of policy makers, could hamper the delivery of project findings and trigger a need to change the content of the output. One interviewee described a project that spanned a European election cycle encountering this obstacle. Sometimes this occurred under

severe time pressures and with no extra budget, so at points of uncertainty in policy cycles, commissioners and contractors need to be clear about the agreed focus of a study.

Outputs used in examples of foresight discussed by interviewees included formats such as presentations, visual mapping, and reports. Another stated that can vary due to greater engagement and incorporation of stakeholders in some foresight exercises, which allowed results to be disseminated and adopted organically in a variety of ways. One interviewee pointed to reduced appetite and time among policy makers to read long documents, so much communication of foresight took place through lectures and presentations. This can pose challenges for accurate recall of information so a combination of written and verbal outputs is therefore needed. Another interviewee felt that with the benefit of hindsight, evidence reports produced for a foresight project could have been shortened with no loss of significant meaning, but which would have improved their readability.

Interviewees also noted the importance of innovative and interesting formats of output to keep clients engaged, such as graphics and animation, depending on the audience. One foresight study example promoted this, which an expert research contractor called “creative communication”, delivered in ways specifically tailored for the audiences targeted. Another made use of ‘vignettes’ based on individual experiences of living in a future time period which helped bring to life the challenges and opportunities that might arise and developed a short brochure with attractive graphics. Rhisiart et al. (2014b) identify an important design element in creating impact pathways for foresight work is producing attractive outputs for different stakeholders. The latter includes summary versions of scenarios, attractive graphics and creative vignettes – stimulating and accessible resources for a range of stakeholders.

Once foresight researchers delivered contracted outputs, further work was largely undertaken by the client to create outputs for use by policy makers or particular interest groups such as web-based tools for young people. One interviewee described an online, web-based communication tool that was developed and could be used in future scenario building exercises. Another produced knowledge maps illustrating the structure of the sectors of interest and the relationships between key actors which provided a helpful overview for new entrants and stakeholders working in the area.

One interviewee stated that stakeholders could aid in dissemination in a way that research contractors did not, because stakeholders could distil findings into user-friendly outputs. Stakeholders’ publications are often promoted and disseminated as part of knowledge sharing and improving implementation of findings and served to stimulate further discussion and raised the profile of the foresight studies. One constraint in this area was short-term funding which limited follow-up work including dissemination of findings.

3 Conclusions

This section presents the conclusions from analysis of the literature review and expert interviews. Overall it is clear that foresight projects have a global reach, are conducted in a wide variety of policy fields and have a diversity of impacts, although it can be difficult to measure these definitively. There are notable specific examples of policy change and impact in the research, development, science and innovation fields, where a substantial minority of foresight studies are conducted. Broader benefits include knowledge sharing and creation, as well as validation and legitimising current and new policy proposals. There is much more work that could be done to build in ways of measuring impact within and beyond the lifespan of foresight projects. A major benefit of projects lies in bringing stakeholders together and creating new networks which lead to future collaboration, although these kinds of benefits can be hard to monitor and track.

The literature review and interviews outlined a number of key factors that were important in achieving policy impact through foresight and these are discussed below.

3.1 Key factors for achieving policy impact in foresight studies interviews

We have considered the evidence of the literature review and expert interviews in terms of a number of factors and our conclusions are summarised in the table below.

Table 6: Key Factors for Achieving Policy Impact in Foresight Studies

Factor	Remit of	Literature/cases
Clarify what the foresight study is seeking to achieve which cannot be achieved by other policy means	Commissioners	Understand and adapt to the context, as foresight cannot be evaluated without regard to context (Georghiou and Keenan, 2006)
Establish a clear link between foresight and policy agenda	Commissioners	Calof and Smith (2010) discuss relevance to client needs, client receptiveness and support
Identify clients/beneficiaries and users of foresight study	Commissioners	Focus on a clearly identified client (Calof and Smith, 2010)
Use of expert foresight contractors to sell and explain the benefits of the methods, and assume advisory role to policy makers on foresight use	Commissioners	As in section 2.5.4.
Embed client representation on the foresight research team	Commissioners	Secondment of client representative to foresight contractor
Ensure policy engagement by achieving relevant focus	Commissioners	Customise scenarios for each project to maximise; build in quantitative elements to method where preferred by clients
Ensure political and policy ownership	Commissioners	Nurture direct links to senior policy-makers
Education of clients and participants	Commissioners Researchers	As in 2.5.3 above. Prepare workshop participants carefully to maximise their contributions
Engage appropriate stakeholders through the foresight study and beyond in its implementation	Commissioners Researchers	Integrate stakeholders into foresight programmes (Calof and Smith, 2010; Rhisiart et al, 2014; The Future of UK Jobs and Skills, UK CES). Maximise range of stakeholders involved and consider using online methods to do so and share inputs transparently

Factor	Remit of	Literature/cases
Project management: frequent communication to keep project on track	Commissioners Researchers	As in section 2.5.4.
Measuring impacts to increase perceived value	Commissioners Researchers	Measure outputs/outcomes against expectations and build measurement options into the foresight process, capture unanticipated consequences
Incorporating range of appropriate disciplines in the foresight study	Researchers	Volume of expertise points above in 2.5.1
Managing expectations	Researchers	Ensure clients understand purpose and value of foresight to demystify prior conceptions
Communication and engagement: produce high-quality outputs that can engage with different stakeholder groups/audiences	Researchers	Outputs points above in 2.5.6. Encourage stakeholders to disseminate findings. Use a suite of outputs tailored to different groups, consider use of vignettes and infographics to capture attention and signpost users to most relevant outputs
Ensure balance between breadth of topic coverage and depth analysis	Researchers	See section 2.5.4.
Deploy foresight methods appropriately – the value added of foresight approaches	Researchers	Develop and employ methodologies and skills that are not always used in other departments (Calof and Smith, 2010)
Adaptation and flexibility as client's goals change and the involvement of different actors can alter over the course of a project.	Researchers	As in 2.5.2 above

The main points that emerge are:

- the need to develop a clear question which is challenging and engaging to secure client commitment especially from end policy users,
- a need to educate and manage user expectations,
- a need to maximise volume and diversity of engagement from participants,
- a need to manage projects effectively through regular communication and use of expert input,
- a need to tailor the content of foresight research to meet policy interests,
- a need to deliver outputs in a usable and engaging format and build in a way of measuring impact from the start of projects.

A range of contextual factors can also influence the level of appetite for and impact of foresight including changing policy priorities and research method preferences. It is likely to be helpful to find ways of aligning the focus of the topics of foresight research to major policy priorities. This would help foresight work be seen to play a contributory role in supporting the development of key policy actions, through illustrating how understanding future scenarios can help solve current as well as long-term policy challenges.

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Annex A: List of expert individuals interviewed

Interviewee	Job title	Country
Dr Jennifer Cassingena Harper	Malta Council for Science and Technology	Malta
Liviu Andreescu	Executive Agency for the Funding of Higher Education, Research and Development, and Innovation (UEFISCDI)	Romania
Linda Tinio	UNESCO	France
Cecilia Cabello	Spanish Foundation of Science & Technology (FECYT)	Spain
Christoph Bogenstahl	Institute for Innovation and Technology	Germany
Dr Didier Schmitt	European Commission	Belgium
Jonathan Breckon	NESTA	UK
Professor Ted Fuller	Professor of Entrepreneurship and Strategic Foresight, University of Lincoln	UK
Scott Aughenbaugh	Fellow, International Security Program and Deputy Director, Strategic Futures, CSIS	USA
Professor Jonathan Calof	Telfer School of Management, University of Ottawa	Canada
Angela Wilkinson	OECD	France
Professor Markku Wilenius	University of Turku	Finland
Dr Eckhard Störmer	Z_punkt GmbH The Foresight Company	Germany
Dr Günter Clar	Steinbeis-Europa-Zentrum	Germany

In addition, one further expert interviewee wished to remain anonymous

Annex B: Interview guide

- **Interview guide EU-OSHA Foresight Study: Draft discussion guide**

To start

Explain study: IES – an independent, non-political research charity - is currently undertaking a review of success factors affecting the impact foresight studies on policy on behalf of EU-OSHA – the European Agency for Occupational Health and Safety.

The evaluation aims to identify success factors, barriers to success, and risks associated with commissioning, designing, researching and disseminating foresight studies.

- Inform interviewees that while we may wish to list them/their organisation in an appendix to the report, all information they provide will be pooled with other respondents', and their individual views will not be attributed.
- Ask to tape interview, if not comfortable, take notes: the tapes/full notes will only be seen by the research team.
- Explain that this interview is voluntary, and can be terminated at any point. Check their availability (approx. 40 min – 1 hour)
- Thank them for their participation.

- **General background**

I would like to start by asking you some basic questions about you, your organisation, and your organisation's involvement with foresight studies.

Routing: ask all interviewees

1. Please outline your current role and the role of your organisation.
2. Please give us an outline of the foresight study(ies) you have commissioned/used/conducted?
3. What was your personal connection to the foresight project(s)? What did this connection/role entail?
4. When and why did your organisation first become interested in foresight studies? What did you think foresight studies could achieve in principle? What kinds of issues did you think foresight studies could address in principle? What did you understand to be the strengths and weaknesses of foresight approaches? (Note for interviewer – trying to get at how much individual knew about foresight)

- **Commissioning**

Now, I would like to ask you some questions about how the foresight study you/your organisation is/was most involved in was first commissioned

Routing: ask commissioners

5. Who commissioned this foresight project? What was the purpose of the project and what were commissioners hoping to achieve through it? Was the project influenced by prior foresight studies?

Probe: set research priorities, affect attitudinal change internal/external to commissioner, as well as predicted areas of practice that could change

Routing: ask commissioners

6. Why did you choose to commission a foresight study as opposed to another type of research? Were you influenced by prior experience or research (or both/neither)? Would you make the same decision again? Why/why not?

Routing: ask all interviewees

7. How do colleagues in (your organisation) feel about foresight studies? Were they consulted before/during/after commissioning the research? Are there any variations in the views of different types of staff'?

Probe for: perceived robustness, practicality, ability to lever change

Routing: ask researchers

8. Why did you seek to undertake the project?
9. How did you become involved/what was the bidding process?
10. How clearly specified was the study? Did you have any opportunity to shape the methodology?
11. Who was the intended audience (academic/organisational/policy)?
12. How much contact was there between you and the client? And between the client and policy users before/during the project?

Routing: ask commissioners and researchers

13. When designing the project, how did you intend to measure any expected impacts? Why did you choose this approach?

- **Process**

Now, I would like to talk to you about how the project developed during the research process.

Routing: ask researchers/commissioners

14. During the research period, what kind of communication was there between researchers and commissioners? How often and in what form? Did this change/influence how the study was being carried out at any point?
15. What type of engagement did you have with stakeholders during the foresight project? (who/how?) What was the level of engagement with policy or organisational users/the intended audience?

Probe: designing scope of study, designing research tools, designing outputs

Routing: ask researchers

16. Did your aims and expectations about what you could achieve with the research change at all during the course of the project? Why/why not? If so, how?

- **Delivery**

Now, I would like to ask you some questions about the outputs produced by the research project, and their impact

Routing: ask all interviewees

17. Can you describe what outputs were produced from the project?

Probe: report, presentation, risk matrixes, etc.

Routing: ask researchers

18. How do/did you present the output of the research project? What made you choose this/these formats? Did this differ from how you would present other types of research? Why/why not?

Routing: ask all interviewees

19. How have the results of the project been used? (probe: seminars/workshops; social media campaign; policy briefings etc.)
20. What role did stakeholders have in dissemination and stimulating further discussion around the results? How important was this?
21. How do policy customers feel about foresight studies?

Probe for: perceived robustness, practicality, ability to lever change

22. What impact did the project have a) in your organisation b) on those commissioning it c) on policy users:

	Organisation	Those commissioning	Policy Users
Before formal commissioning?			
While research was being undertaken?			
On delivery of its outputs?			
(next 3 options as applicable)			
1 year after delivery?			
5 years after delivery?			
Now?			

Probe for: Change policy/ practices, lever influence, strengthen relations, identify/change priorities

23. Were these impacts expected? Were there any unexpected, value-adding impacts? Or any not achieved? If so, why?
24. Were the aims of the project achieved? What evidence/data have you used to make this assessment?
25. Why do you think these aims were/were not achieved?
26. Did the foresight study influence any subsequent research?
27. How successful do you think the project was? Why do you say that? What factors helped increase or reduce the project's impact and why?

28. Thinking about the project afterwards, what would you change if you had an opportunity to do it again? What have you learnt for future foresight studies? What advice would you give to other commissioners/researchers/users to help maximise the impact of foresight projects on policy users?

Probe for: commissioning, project management, types of output

- **Close**

Routing: ask all interviewees

29. Do you have any other people we could possibly get in touch with regarding this work?
30. Can you identify any foresight studies which have had a major impact on policy users? Why do you think they were particularly successful?

THANK YOU VERY MUCH FOR TAKING PART IN THIS INTERVIEW. THE RESULTS WILL BE USED IN A REPORT TO BE PUBLISHED BY EU-OSHA LATER THIS YEAR.

Annex C Literature search strategy

Where each database allowed, the search was constrained to English language; peer-reviewed; journals, ('scholarly journals' in ABI/Inform), research papers, reports and working papers; and adult populations. Where the Advanced Search function allowed search to be restricted to Abstract and/or keywords the search was narrowed to these fields. Two platforms did not offer this option; in these the search was constrained to Title only. The following databases were searched:

Table 1: **Name of database**	Table 2: **Description**
Google Scholar	Search tool for scholarly literature inc. theses, books, abstracts and articles.
INGENTA	IngentaConnect gives access to over 28,000 academic and trade journals across a wide range of subject areas.
PsychINFO	Index covering psychology and psychological aspects of related disciplines, including education, psychiatry, medicine.
Zetoc	The British Library's Electronic TOC Service and indexes 20,000 journals and 16,000 conference proceedings.
CISDOC	Occupational Health and Safety Database of publications from ILO
ABI/INFORM	Database of Business Research - combines business journals and sources of online business with international and scholarly content.
ASSIA	Applied Social Sciences Index and Abstracts - provides references and summaries of articles from 650 journals covering: social services; social work; sociology; education; health.
Emerald	Emerald includes access to academic articles on human resource management.
IBSS	International Bibliography of the Social Sciences – indexes material on economics, sociology, politics and anthropology.
JSTOR	An archive of electronic journals which currently provides access to more than 200 scholarly titles in over 20 disciplines in the Arts and Sciences.
Web of Science	This service provides access to the Web of Science databases: Arts & Humanities Citation Index; Social Science Citation Index; Science Citation Index.

Source: IES, 2014

In addition to scientific literature, we reviewed the results of some European initiatives that have supported the exchange and dissemination of learning on foresight exercises, including FOR-LEARN[2], funded by the European Commission's DG Research under FP6.

[2] http://forlearn.jrc.ec.europa.eu/guide/0_home/index.htm

Annex D: EU-OSHA Foresight Success Factors: data extraction proforma

- **Document classification**

Author(s):
Date:
Full reference:
Geographic scope:
Weblink to report:
Name of foresight study:
Date when foresight study was conducted:
Name of client:
Name of any contractor(s) used:
(If multiple studies are covered, please list all)
Any links to /implications of the study for OSH (or note where no connections): None – potential for transferable lessons

- **Overview of methods used *(tick all that apply)***

Quantitative research	☐	Policy document	☐	Evidence/literature review *(please note whether review of other reviews etc.)*	☐
Qualitative research	☐	Opinion piece	☐	Other – please specify	☐

Assessment of research quality (item being reviewed NOT the foresight methods used)
Brief description of methods used including (where relevant) sample size, sampling strategy, response rate, reasons for non-participation, any weaknesses in the data, evidence of bias etc.
Validity of the research – are measurements accurate? Is any data missing or are there gaps? Does the analysis support the conclusions drawn? Should the findings be given a high (very robust), medium or low (not very robust) weight?
Peer reviewed?

- **Background to foresight approach**

Describe the foresight methods used
Give any details of stakeholders/target audience involved at an early stage of the foresight development and nature of involvement (or state if no information provided on this)

- **Summary of findings relevant to research themes**

Please include page numbers for data and quotes

Describe the outcomes and impact of the foresight study, noting particularly any impact on policy. What area of policy was influenced, using what kind of channels and over what time period? What policy changes were made as a result? Did any other factors beyond the foresight study contribute to this? What features of the foresight study led to the impacts identified? Were the features implemented in a particular sequence? Were any factors more or less important than others?

Which, if any, methods used in the foresight study were identified as particularly innovative or well executed? Why? Does the item make any recommendations for future foresight projects? Is there any other information that should be taken into consideration either from the foresight study considered or the item being reviewed? What evidence is there that the foresight manages to:

- Focus on a clearly identified client.
- Establish a clear link between foresight and today's policy agenda.
- Nurture direct links to senior policy-makers.
- Create strong public–private partnerships.
- Develop and employ methodologies and skills that are not always used in other departments.
- Ensure a clear communication strategy.
- Integrate stakeholders into foresight programmes.
- Take advantage of the existence of, or create, a national–local academic receptor and training capacity

Reviewer initials:	Date:

The European Agency for Safety and Health at Work (EU-OSHA) contributes to making Europe a safer, healthier and more productive place to work. The Agency researches, develops, and distributes reliable, balanced, and impartial safety and health information and organises pan-European awareness raising campaigns. Set up by the European Union in 1994 and based in Bilbao, Spain, the Agency brings together representatives from the European Commission, Member State governments, employers' and workers' organisations, as well as leading experts in each of the EU Member States and beyond.

European Agency for Safety and Health at Work

Santiago de Compostela 12, 5th floor
48003 Bilbao, Spain
Tel. +34 944358400
Fax +34 944358401
E-mail: information@osha.europa.eu

http://osha.europa.eu

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