



Foresight

Developing the capacity to assess the impact of foresight
Ron Johnston

Article information:

To cite this document:

Ron Johnston, (2012), "Developing the capacity to assess the impact of foresight", Foresight, Vol. 14 Iss 1 pp. 56 - 68

Permanent link to this document:

<http://dx.doi.org/10.1108/14636681211210369>

Downloaded on: 06 September 2015, At: 17:26 (PT)

References: this document contains references to 18 other documents.

To copy this document: permissions@emeraldinsight.com

The fulltext of this document has been downloaded 583 times since 2012*

Users who downloaded this article also downloaded:

Jonathan Calof, Jack E. Smith, (2012), "Foresight impacts from around the world: a special issue", foresight, Vol. 14 Iss 1 pp. 5-14 <http://dx.doi.org/10.1108/14636681211214879>

Ian Miles, (2012), "Dynamic foresight evaluation", foresight, Vol. 14 Iss 1 pp. 69-81 <http://dx.doi.org/10.1108/14636681211210378>

Jonathan Calof, Riel Miller, Michael Jackson, (2012), "Towards impactful foresight: viewpoints from foresight consultants and academics", foresight, Vol. 14 Iss 1 pp. 82-97 <http://dx.doi.org/10.1108/14636681211210387>



THE UNIVERSITY OF
SYDNEY

Access to this document was granted through an Emerald subscription provided by emerald-srm:216535 []

For Authors

If you would like to write for this, or any other Emerald publication, then please use our Emerald for Authors service information about how to choose which publication to write for and submission guidelines are available for all. Please visit www.emeraldinsight.com/authors for more information.

About Emerald www.emeraldinsight.com

Emerald is a global publisher linking research and practice to the benefit of society. The company manages a portfolio of more than 290 journals and over 2,350 books and book series volumes, as well as providing an extensive range of online products and additional customer resources and services.

Emerald is both COUNTER 4 and TRANSFER compliant. The organization is a partner of the Committee on Publication Ethics (COPE) and also works with Portico and the LOCKSS initiative for digital archive preservation.

*Related content and download information correct at time of download.

Developing the capacity to assess the impact of foresight

Ron Johnston

Ron Johnston is Executive Director at the Australian Centre for Innovation, University of Sydney, Sydney, Australia.

Abstract

Purpose – *The objective of this paper is to contribute to improved practice and impact of foresight through the development and testing of a Foresight Impact Evaluation Schema. The schema is designed to guide foresight practitioners in the more effective design and conduct of foresight exercises to optimise impact.*

Design/methodology/approach – *The development of the schema is based on the significant previous work in this field, and the author's experience of designing and managing more than 100 foresight projects. It also takes into account accumulated experience with heuristics developed to guide foresight design and management, and with various approaches to evaluating the impact of social science knowledge on policy- and decision-making.*

Findings – *A range of impacts identified from major foresight projects have been characterised according to four categories of impact - awareness raising, informing policy, enabling greater capacity to address uncertainty, and influencing policy, strategy, investment, program delivery and public attitudes.*

Research limitations/implications – *The schema needs to be tested against a variety of foresight projects to further refine its usefulness.*

Practical implications – *With the rapid growth of the application of foresight, it has become essential to guide practitioners in the appropriate design and management of all the processes associated with foresight to achieve maximum impact, and to demonstrate the value of the investment in foresight to consequent policy and planning.*

Originality/value – *This paper builds on earlier and contemporary work to develop a more refined and applicable schema to guide foresight impact evaluation.*

Keywords *Foresight, Impact, Evaluation, Framework, Uncertainty management, Investments*

Paper type *Research paper*

1. Introduction

The past five years have seen a burgeoning interest in assessing the impact of foresight. Those who are using foresight, or funding its activities, are seeking evidence of the extent and type of value and outcomes that can be achieved. Foresight practitioners are increasingly aware that the continuing growth in the foresight will rest on persuasive demonstrations of its value.

Thus Georghiou and Keenan (2008, p.379) argue that:

“Since foresight is a policy instrument consuming time and resources, it is reasonable to expect that it should be subject to evaluation of a comparable rigour to other tools.” In a generalised evaluation framework, three basic tests could be applied.

These are accountability (whether the foresight was efficiently conducted), justification (whether the effects of foresight justify its costs) and learning (how foresight can be done better).

This paper is based on a report by the author in 2010, commissioned by Foresight in the UK Government Office for Science as a discussion paper for the Second Meeting of the International Foresight Professional Network at the OECD in Paris on 1 March 2010. The generous support of Foresight and its Head, Professor Sandy Thomas, is gratefully acknowledged.

To this end, significant effort has been devoted to developing an appropriate typology of foresight impacts on which a robust system of impact assessment could be developed.

2. Establishing a framework for foresight impact assessment

Building on his three generations of foresight schema (Georghiou, 2001), it has been argued that different impacts should be expected from the various generations of foresight. Thus:

For first generation foresight the key issues are accuracy of prediction and diffusion of results (to non-experts). In the second generation the take-up of priorities and establishment of networks among the industrial and academic participants become key evaluation issues, while the third generation implies the involvement of stakeholders in evaluation and looks for evidence of the emergence of a foresight culture (Georghiou and Keenan, 2008, p. 378).

Johnston (2007) has emphasised that these generations should not necessarily be regarded as successive, or that one is necessarily superior to another. For example, the strong growth in horizon scanning, a first generational approach to foresight, indicates this approach and its associated goals are still seen as appropriate and directed towards relevant goals by some decision makers. Hence, the goals and methods of each generation of foresight continue to be appropriate under particular circumstances, but will require their own appropriate impact measures.

An alternative perspective is offered by Schartinger and Weber (2007), who outline four roles for foresight: an expert-based policy informing tool, an integral part of policy processes, operating by forward looking strategic support to informing and coordinating functions, a pacemaker through capacity building (including structural capacity) for policy intelligence, and a tool for impact assessment. Clearly, each of these roles implies a different objective, context and operating mode and consequently a different impact.

A detailed examination of the issue of the impact of foresight on policy-making has been provided by Da Costa *et al.* (2008). They identified six functions of foresight for policy-making:

1. informing policy i.e. generating new insights;
2. facilitating policy implementation i.e. enhancing awareness of challenges to be addressed;
3. embedding participation in policy-making i.e. facilitating participation;
4. supporting policy definition i.e. translating outcomes into specific policy options;
5. reconfiguring the policy system (so that it is more capable of addressing long-term issues; and
6. having a symbolic function, signalling a rational approach.

In simple terms, the types of impacts associated with each of these six functions might be, respectively:

1. extent and effectiveness of demonstrated input to policy thinking;
2. extent of awareness building and networking;
3. extent of participation and stakeholder engagement in policy processes;
4. extent and effectiveness of translation of foresight outputs into policy initiatives;
5. enhancement of the future orientation and capacity of policy makers and institutions;
6. extent of adoption of foresight as good planning and management practice.

Havas *et al.* (2010) have refined these concepts to argue that foresight can assist decision-makers through the provision of three functions:

1. *Informing*. That is, generating consolidated findings concerning the dynamics of change, future challenges and options.
2. *Interpreting*. The insights of foresight and merging those results with perspectives on strategic positioning.

3. *Facilitating*. Namely fostering implementation by developing shared visions among major stakeholders on desirable future developments, and thus implicitly co-ordinating their actions.

This model is used to develop a framework to classify the impacts of foresight (Table I). It identifies a set of useful categories of impact against the three functions, and according to whether the time-lag is immediate, intermediate or ultimate. This framework will be used in the development of an impact schema later in this paper.

Another attempt at developing frameworks to evaluate policy outcomes is that of Georghiou and Keenan (2008, p. 387.), in which six output items are identified – influence on Government Department expenditure, coordination, science base expenditure, and formation of new industry-science networks, plus contribution to quality of life goals and regional engagement. A possible metric is offered for each output.

Also, Ladikas and Decker (2004) have developed a matrix approach to a typology of impacts, with axes of type of impact – “raising” knowledge, forming attitudes/opinions and

Table I A framework to classify the impacts of foresight

<i>Function</i>	<i>Time lag</i>	<i>Targeted and/or unintended impact</i>
Informing	Immediate	Increased recognition of a topic area Individual learning: awareness of science, technology and innovation options among players, fostering debate Context and views of other stakeholders become clearer Foresight skills are developed in a wider circle New network options through dialogues in new combinations of experts and stakeholders, shared understanding (knowledge network)
	Intermediate	Realisation and continuation of established common understanding Informing
	Ultimate	Integrating able new actors and their views and inputs into the community that is shaping an area of concern
Advisory	Immediate	Making hidden agendas and objectives explicit Effective actions taken
	Intermediate	Devising recommendations and identifying options for action Activating and supporting fast policy-learning and policy-unlearning processes Identify hidden obstacles to the introduction of more informed, transparent, open participatory processes to governance
	Ultimate	Influence on (research/ policy) agendas of actors, both public and private (as revealed, for instance, in strategies and policy programmes) Formulation and implementation of new policies Incorporating forward-looking elements in organisations' internal procedures
Facilitating	Immediate	Initiating collective learning processes Articulation of common visions of the future, establishing longer-term perspectives Awareness of systemic character of change process
	Intermediate	Formation of action networks Creation of follow-up activities Development of new projects
	Ultimate	Adoption of foresight results in the research and teaching agenda of organisations as well as in various disciplinary matters Increasing the coherence of policies Cultural changes towards longer-term and systemic thinking

initialising actions, and type of issue – technological/scientific, societal and policy. Within this matrix, some very broad impacts are identified, e.g. “new orientations in policy established” and “innovations implemented”. Such broadly framed impacts would inevitably prove very difficult to measure, or even to realise a consensus judgment.

Finally, Yuan *et al.* (2010) identify 12 “benefits” of foresight on the basis of an extensive review of the foresight literature:

1. Generating national strategy.
2. Prioritising resources.
3. Changing existing institutions and building partnerships among actors.
4. Enhancing intelligence systems and stimulating the exchange of information.
5. Building early warning systems.
6. Communication and coordination.
7. Propelling societal learning processes.
8. Knowledge management.
9. Stimulating innovative policy making.
10. Enhancing the environment for innovation.
11. Impacting on firm strategy.
12. Impacting on new product development.

Before concluding this analysis of appropriate frameworks for the assessment of the impact of foresight activities, a number of useful heuristics have been developed to guide the design and performance of foresight so as to maximise positive impact.

3. Heuristics to guide foresight design and management

One example of a highly effective practice of foresight, in which implementation, diffusion and evaluation is a central and well-resourced component of the process is provided by the program of UK Foresight[1].

Essential features of this approach include:

- An accepted practice that the key relevant Minister or Ministers sponsors the project, chairs the High Level Stakeholder Group and has responsibility for championing implementation.
- An extensive process of stakeholder engagement, which includes requiring the stakeholders to commit to identifiable action to implement the project findings.
- The preparation and release of an action plan at the same time as the foresight report is published, which identifies the range of actions to be taken towards effective implementation.
- A proactive diffusion process whereby UK Foresight staff actively promote the findings to a range of Government Departments and agencies and other groups over a significant period, (one-three years?) and act as intermediaries to facilitate uptake and adoption.
- A formal one-year review after each project, which is based on input from the stakeholders about what impact the foresight report has had and how it has been used and implemented (Johnston, 2010).

This approach would appear to represent a good model for both ensuring effective implementation and providing a sound basis for demonstrating impact.

A set of practical guidelines emerged also from the deliberations of the Third International Seville Seminar on Future-Oriented Technology Analysis in 2008 (Haegeman *et al.*, 2010). These guidelines included:

- Do not think of impacts at the end.

- Make sure the client's policy commitments as well as communication resources are well provided for and planned early in the process.
- Establish explicit expectations and measures to assess performance.
- Stay connected to leadership.
- Keep the message simple and keep improving it through rigorous pursuit of impact.
- Translate and transfer FTA outputs into policy and decision outcomes.

Calof and Smith (2008) caution that:

[. . .] methodology, appropriate budget and techniques alone are insufficient to result in foresight program success. To be regarded as successful, government led foresight programs need to focus on a clearly identified client and there needs to be a clear link between the foresight (topic and process) and the government's policy agenda.

Cagnin and Johnston (2011) confirm this viewpoint:

Based on experience of formal evaluation of foresight programs, it was claimed that lack of success had very little to do with the quality of the work that has been done and much more to do with initial and subsequent political positioning. If the program has built-in channels such that decision-makers feel ownership and are ready to take notice it seems to have a greater impact. If it is sponsored by an organisation that is out of favour then regardless of the quality of the foresight work there may be little impact.

On the basis of a series of interviews and a survey associated with the Third Seville Seminar, eight factors have been identified as critical to success in government led foresight programs (Calof and Smith, 2010):

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

Finally, it is also worth noting that perception of impact will vary with the characteristics of the person making the response. Yoda (2011) has studied the perceptions of the impact on policy making held by science experts who have been participants in the regular Japanese Delphi exercise. He finds that the perceived overall impact is reported as not very high. In addition, perceptions of impact are greater among younger people, those from industry rather than universities, those working in priority S&T fields and those closely involved in the exercise. Perhaps not surprisingly, the last of these categories expect more impact than apparently achieved, and hence are less satisfied with the perceived level of impact.

4. Evaluating the impact of social science knowledge on policy- and decision-making

Prior to proceeding with the foresight impact assessment schema, it may be useful to situate this approach to evaluation within the larger experience of the impact of social science knowledge on policy- and decision-making. The UK Economic and Social Research Council has conducted a major program to enhance the practice of evaluation of the impact of research on policy and practice.

Foresight impact evaluation, which is largely descended from research evaluation, shares a degree of disconnectedness with mainstream program evaluation. Thus, while evaluation of government programs has had a long history, the evaluation of research programs "has

instead grown up as an independent craft that shares some values and practices with the other traditions” (Cozzens, 1997).

The major findings from an international symposium organised by the ESRC was that:

- dissemination is not impact: impact evaluations of social science research should therefore look beyond dissemination to capture evidence of application by research users;
- impact assessment methods should seek to capture the wide diversity of social science impact, including improved economic performance and better informed public policy and decision making, and
- evaluations should examine the processes through which impact occurs within a particular setting, since impact is often contextually determined (ESRC, 2009).

They identify three types of impact of social science research:

1. Instrumental (for example, influencing the development of policy, practice or service provision, shaping legislation, altering behaviour).
2. Conceptual (for example, contributing to the understanding of these and related issues, reframing debates). This would include the important roles of provision of a language with which to explore and understand the social world and its influences, and agenda setting by influencing what are seen as priorities.
3. Capacity building (for example, through technical/personal skill development, but also including institutional capacity to address certain issues).

Much of the analysis is comparable to that which has been applied to foresight impact evaluation: the difficulties of quantification, attribution and knowledge creep, along with the fact that knowledge always builds on other knowledge.

Furthermore the extent and nature of research influences on policy and practice depend not only on the research messages themselves, “but also on the ways in which these messages are delivered and the environment into which they are delivered. Processes (user engagement, dissemination, networks, consultancies etc) and contexts (for example, policy relevance, user receptiveness, timing, financial or political issues) will all have a bearing on the uptake of research findings” (ESRC, 2009, p. 4).

There is also the issue that policy and service developments are not linear processes building only on evidence. This idea has been elegantly stated in the context of foresight impact evaluation by Georghiou and Keenan (2008, p. 378):

The common space and joint ownership elements associated with foresight imply that it should not be viewed as being in a linear or sequential relationship with implementation but rather that it should move into the “implementation space”. In other words, the conduct of foresight itself moderates the implementation of emerging findings (or at least the conditions for their implementation), and the environment for implementation affects the way in which foresight ought to be conducted – foresight and implementation are interactive activities.

The ESRC report identifies six factors that are vital for impact generation. These are:

1. Established relationships and networks with user communities.

Social science researchers clearly need to maintain ongoing communication and engagement with research users, and develop an awareness of current (and likely future) policy and practice debates and initiatives, in order to time their work most effectively (ESRC, 2009, p. 15).

2. Involvement of research users at all stages of the research.

Sustained contacts with users, based on personal relationships and built up over the long term were the most important channels for policy and practice applications. Evaluators commented that the ideal connectivity with users was a two way process, where research findings were fed into policy and practice arenas, whilst pertinent policy and practice issues could inform the development of new research ideas. Early and continuous engagement with users at various stages of the research (from design through to dissemination) could help to increase the

relevance and accessibility of research findings and increases the probability of impact (ESRC, 2009, p. 14).

3. Well-planned user-engagement and knowledge exchange strategies.

Ensuring that research findings are accessible (both practically and in the language used) to policy makers and practitioners is also a key determinant of impact generation (ESRC, 2009, p. 14).

4. Portfolios of research activity that build reputations with research users.

5. Good infrastructure and management support.

6. Where appropriate, the involvement of intermediaries and knowledge brokers as translators, amplifiers, network providers.

5. A foresight impact schema

Despite all the efforts described in the earlier sections, the development of a coherent and agreed framework for foresight impact evaluation has progressed very slowly. A great many of the projects conducted by the burgeoning foresight industry pay limited attention to the dimension of impact. Where foresight impact is on the agenda, the approaches are frequently isolated, failing to draw on the hard-won knowledge which has been accumulated.

With the rapid growth of the application of foresight, it has become essential to guide practitioners in the appropriate design and management of all the processes associated with foresight to achieve maximum impact, and to continue to develop the capability to demonstrate the value of investments in foresight in consequent policy and planning.

In an effort to contribute to this objective, a Foresight Impact Schema has been developed and subjected to some testing. This framework is intended to provide guidance in the development of an impact assessment protocol appropriate to each foresight project, the precise details of which will need to be determined by the foresight practitioner, bearing in mind the objectives and other contextual characteristics of the project.

This Schema is specifically focused on the managerial, incremental or adaptive types of foresight i.e. where the objective is to contribute to improved strategic consideration and planning largely within existing organisations and structures. It is recognised that there is also a transformational or disruptive type of foresight where the objective is to radically challenge mindsets. Clearly, a different set of impact categories and measures would be needed for this type of foresight.

It draws on the previous work cited in this paper, but arrives at four types of impact:

1. *Awareness raising*. Increasing the understanding of target audiences about the need, the value, the approach, and the methods of foresight in addressing the challenges of understanding and preparing for the future.
2. *Informing*. Providing conceptual and empirical inputs to assist in achieving more effective and more appropriate planning and decision-making.
3. *Enabling*. Providing or developing the capacity to more effectively engage with the inextricable uncertainty associated with the future.
4. *Influencing*. Shaping both the thinking and the consequent outputs, be they policy, law, standards, services and their delivery, business strategy, investment, commercial products and services, research priorities and funding, accepted practices or public attitudes.

An awareness raising impact will typically be demonstrated by indications of an increase in foresight awareness, use of foresight in planning and decision-making and consideration of issues with a long-term time horizon. For example, concerns over the dramatic growth in levels of obesity has evoked a recognition among organisations with relevant interests and responsibilities (e.g. Ministries of Health, the medical profession, nutritionists, the food industry and the burgeoning personal fitness industry) to take a much longer term view on the appropriate causes and cures (see Table II).

The informing impact will be revealed by a range of measures such as policy and programs that clearly draw on the concepts, findings and data of foresight, adoption of agendas and terminology arising from foresight, establishment of a horizon scanning capacity and shifting of research priorities in accord with foresight findings. For example the UK Future Flooding project provided a major shaping basis for the subsequent Government strategy for addressing flooding and coastal erosion in England. (see Table II)

The enabling impact could be reflected in increased application of foresight to planning and management, greater competence in managing uncertainty, strategy being formulated over longer time-horizons, and evidence of higher level of comprehension across the community about approaches to address uncertainty and major change.

The influencing impact would be demonstrated in a range of consequences, such as – Enhanced long-term policy and strategy development reformulation of strategy in light of learning from foresight, increased collaboration in addressing major future issues, structures to support future-oriented research, greater coherence and cooperation among third sector organisations and higher levels of confidence in the planning and decision-making processes of governments.

Typical outcomes and possible metrics are identified for each of the four categories of foresight impact (Table III)

It is recognised that these categories are not logically completely distinct. They may overlap, and in some circumstances it may be difficult to clearly distinguish between particular types of impact. In addition, more than one type of impact may be commonly achieved.

Indeed, several impact dimensions are likely to manifest themselves in parallel, whereby the latter are often contingent on the achievement of the earlier ones, e.g. an informing impact may be preceded by an awareness raising impact.

It should also be understood that it is the achievement of appropriate impact rather than a greatest impact that is crucial in foresight. For example, a capacity building exercise which has impacts in “awareness raising” and “informing” may well surpass an “influencing” exercise on a highly specific issue in terms of its ultimate impact.

6. Case studies

To further prepare the basis for an effective foresight impact assessment schema, an analysis is offered of the application of the range and types of impacts identified in two case studies – the long-running UK Foresight program and a foresight project on irrigated agriculture in Australia.

A range of impacts identified from major foresight projects have been characterised according to four categories of impact, derived from the analyses reported herein, namely awareness raising, informing policy, enabling greater capacity to address uncertainty, and influencing policy, strategy, investment, program delivery and public attitudes. Of course there may be a number of impacts arising from a specific project (Table II).

Table II reveals that the catalogue of impacts identified as arising from the UK Foresight program appear to align well with the four different types of impact, the categories of outcome and the possible metrics.

The irrigated agriculture project was designed primarily to engage the variety of people whose livelihoods depended on irrigated agriculture to begin a considered process of exploring the kinds of changes they may have to adapt to over the next decade, and not directly to shape government policy. Nevertheless, a range of impacts could be identified (Table IV).

7. Conclusions

With the rapid growth of the application of foresight, it has become essential to guide practitioners in the appropriate design and management of all the processes associated with foresight to achieve maximum impact, and to demonstrate the value of the investment in foresight to consequent policy and planning.

Table II Reported impacts of UK foresight projects

<i>Title (abbrev.)</i>	<i>Year published</i>	<i>Type of impact</i>	<i>Evidence</i>
Future Flooding	2004	Informing	The project substantially informed "Making Space for Water"; a Defra-led, cross-government 20 year strategy for addressing flooding and coastal erosion in England
		Influencing	The project's innovative methodology has also informed flood-risk management in other parts of the world Future Flooding, the "most credible and comprehensive consideration of future flood risk in the UK" provided the scientific foundation for the Pitt Review of the 2007 floods Provided the evidence base which helped to justify a doubling of Government expenditure to an additional £300 million
		Awareness raising/informing	A major four-year Sino-UK Foresight-style project, successfully concluded in 2009, to develop a long term vision of flood risk management in the China's Taihu Basin, which contains Shanghai Foresight worked with US Army Corps of Engineers to design demonstrator foresight projects in New York and the Gulf of Mexico to assess coastal vulnerability and resiliency
Infectious Diseases	2006	Informing	Foresight worked with FAO and the World Organisation for Animal Health to submit a joint paper to the Russian Presidency of the G8 in 2006
		Influencing	After workshops in Africa, a consortium of 25 leading African institutions planned the creation of the Southern African Centre for Infectious Disease Surveillance
		Enabling	£55 million funding over five years for an innovation platform to develop diagnostic technologies This initiative is led by the UK's Technology Strategy Board and was developed in partnership with the Department for Health and the Department for Environment, Food and Rural Affairs
Tackling Obesities	2007	Informing	Played a central role in informing Healthy Weight, Healthy Lives: a cross-government strategy for England The Scottish Executive drew heavily on the Foresight study when writing "Healthy Eating, Active Living: an action plan to improve diet, increase physical activity and tackle obesity" The project informed "Healthy Weight, Healthy Lives: a toolkit for delivering local strategies"
		Influencing	Foresight developed 'Take Shape', a set of educational resources to help teenagers to understand how to maintain a healthy weight in today's society

(Continued)

Table II

<i>Title (abbrev.)</i>	<i>Year published</i>	<i>Type of impact</i>	<i>Evidence</i>
Mental Capital	2008	Awareness raising	The strategy launched by the Cross-Government Obesity Unit involved an additional investment of £372 million over the period 2008-11 Nine local authorities have become actively involved in a high profile public awareness program called 'Change 4 Life'
		Informing	The findings fed into the government's strategy <i>New Horizons: towards a shared vision of mental health</i> which replaced the National Service Framework for Mental Health Made an important contribution to the evidence base around which the government has developed the first national strategy on mental health and employment Informed other cross-government initiatives, including the plan to support people in contact with secondary mental health services into work; and state support for employment, health for people with mental conditions
Sustainable Energy Management	2008	Influencing	The Health and Criminal Justice Programme is using the report's findings to examine the learning difficulties and mental ill health of offenders In line with the Foresight report, the new strategy calls for an integrated approach to mental health and wellbeing across a person's lifetime It has played a part in setting the strategic direction of both the Medical Research Council (MRC) and Economic and Social Research Council (ESRC) for the next five years
		Enabling/influencing	Departments across government used the report to inform their strategic thinking Within the research community the report helped Research Councils UK to develop the Research Councils Energy Programme (RCEP), a strategy to increase investment in research into reducing demand for energy The Technology Strategy Board aligned its Innovation Platform activities with the department for Communities and Local Government's Eco-Town development with £200 million allocated to projects in this area Foresight's work in identifying and facilitating links on area-based initiatives in led the Department of Energy and Climate Change to announce the Low Carbon Community Challenge

Note: The evidence is drawn from the web site of UK Foresight accessed at www.bis.gov.uk/foresight/our-impact and the 2009 Annual Review, accessed at www.bis.gov.uk/assets/bispartners/foresight/docs/general-publications/annual-review-2009.pdf

Table III Foresight impact schema

<i>Type of impact</i>	<i>Outcome</i>	<i>Possible metrics</i>
Awareness raising	Raised foresight awareness at all levels, sectors and among all staff	Extent of reported use of foresight
	Increased use of foresight in planning and decision-making	Recognition and recruitment of foresight skills
Informing	Increased consideration of issues with a long-term time horizon	Proportion of work-time spent addressing external issues with a time horizon greater than three years
	Greater focus on major long-term challenges	Major drivers of change reported in Annual Report
	Adoption of a longer-term time horizon in planning and decision-making	Scale and influence of major direction-setting mechanisms and resultant level of investment
	Policy and programs that draw on the concepts, findings and data of foresight	Reported use of foresight concepts and data
Enabling	New approaches and issues drawn from foresight	Foresight findings regularly used as evidence basis for decision-making
	Adoption of agendas and terminology arising from foresight	New foresight issues being examined by Government departments, companies, NGOs
	Strategies and decisions that draw on foresight	Level of investment in and use of horizon scanning
	Establishment of a horizon scanning capacity	Changed research priorities
Influencing	Formulation of research programs and objectives based on foresight	Confidence expressed in foresight concepts and data
	Shifting of research priorities in accord with foresight findings	
	Increased foresight capacity	Level of recruitment of specialist foresight skills
	Increased application of foresight to planning and management	Extent of contracting to foresight specialists
Influencing	Effective links to foresight community	Number of foresight workshops and conferences
	Building new tools and techniques	Size of internal foresight budget
	Greater competence in managing uncertainty	Range of foresight issues under active consideration
	Strategy over longer time-horizon	Foresight responsibility at senior (Board) levels
	Higher level of comprehension across the community about approaches to address uncertainty and major change	Timeframe of KPIs
	Enhanced long-term policy and strategy development	Number of Departments influenced by a particular report
	Reformulation of strategy in light of learning from foresight	Extent of influence (e.g. major, moderate, minor) reported
	More effective, appropriate and timely decision-making	Number and scale of follow-on and spin-off foresight projects
	Increased collaboration with other governments in addressing major future issues	National comparative performance in high value added goods and services
	High levels of innovation	Contribution of research to major national and international issues
Research priorities show a longer-term focus	Public confidence in research	
Structures to support future-oriented research		
Greater coherence and cooperation among third sector organisations		
Higher levels of confidence in the planning and decision-making processes of governments		

Table IV Reported impact of the irrigation futures of the Goulburn broken catchment

<i>Impact</i>	<i>Evidence</i>
Awareness raising	It has completely changed my view of what drives irrigation issues and how to respond The project has shown me that we won't necessarily have to manage with far less water, but if we do, it is not the end of the world I realise now we have much more capability if we work through these big issues together
Informing	I now know what forces are driving the future of horticulture I have a much more realistic understanding of the potential for growth of industries in the region
Enabling	Goulburn-Murray Water (GMW) in planning for reconfiguration of the irrigation distribution system using a detailed Water Atlas of the region with working groups systematically examining scenario implications GMW is using the handbook of flexible technologies for irrigation infrastructure developed as an output of the Irrigation Futures project to achieve greater flexibility in their future delivery systems
Influencing	Goulburn Broken Catchment Management Authority (GBCMA) is developing its five-year plan for catchment management based on the Irrigation Futures project
Note: Based on the author's involvement and review of the project – see Johnston (2005)	

The Foresight Impact Evaluation Schema developed in this paper is intended to provide a guide to assist in the more effective facilitation and assessment of impact. This framework is intended to provide general guidance in the development of an impact assessment protocol. However, it will need to be customised to the requirements of any specific foresight project.

A range of outcomes and potential metrics for each category has been developed. This list is by no means complete. Indeed, the Schema has been designed to allow foresight practitioners to insert further material based on their own experience. Hence this Schema should be regarded as a live document to be progressively enhanced. It is apparent, that in addition to the Schema, an understanding of good practice in stakeholder engagement, proactive implementation and objective evaluation is essential.

Note

1. Foresight reports directly to the Government Chief Scientific Adviser and the Cabinet Office. It is a part of the Government Office for Science within the Department for Business, Innovation & Skills.

References

- Cagnin, C. and Johnston, R. (2011), "The influence of future-oriented technology analysis: addressing the Cassandra challenge", *Futures*, accepted for publication.
- Calof, J. and Smith, J. (2008), "Critical success factors for government-led foresight", paper presented at Future-Oriented Technology Analysis International Conference, Seville, October, available at: http://forera.jrc.ec.europa.eu/fta_2008/prog_day1.html
- Calof, J. and Smith, J. (2010), "Critical success factors for government-led foresight", *Science and Public Policy*, Vol. 37 1, February, pp. 31-40.
- Cozzens, S.E. (1997), "The knowledge pool: measurement challenges in evaluating fundamental research programs", *Evaluation and Program Planning*, Vol. 20 No. 1, pp. 77-89.
- Da Costa, O., Warnke, P., Cagnin, C. and Scapolo, F. (2008), "The impact of foresight on policy-making: insights from the FORLEARN mutual learning process", *Technology Analysis and Strategic Management*, Vol. 20 3, May, pp. 369-87.

ESRC (2009), "Taking stock: a summary of ESRC's work to evaluate the impact of research on policy and practice", February, available at: www.esrc.ac.uk/impacts-and-findings/impact-assessment/developing-impact-evaluation.aspx

Georghiou, L. (2001), "Third generation foresight – integrating the socio-economic dimension", *Proceedings of the International Conference on Technology Foresight. The Approach to and Potential for New Technology Foresight*, NISTEP Research Material No. 77, March.

Georghiou, L. and Keenan, M. (2008), "Evaluation and impact of foresight", in Georghiou, L., Cassingena Harper, J., Keenan, M., Miles, I. and Popper, R. (Eds), *The Handbook of Technology Foresight: Concepts and Practices*, Edward Elgar, Cheltenham.

Haegeman, K., Harper, J. and Johnston, R. (2010), "Introduction: impacts and implications of future-oriented technology analysis for policy and decision-making", *Science and Public Policy*, Vol. 37 No. 1, February, p. 6.

Havas, A., Schartinger, D. and Weber, M. (2010), "The impact of foresight on innovation policy-making: recent experiences and future perspectives", *Research Evaluation*, Vol. 19 2, June, pp. 91-104.

Johnston, R. (2005), Evaluation and Diffusion of Irrigation Futures, available at: www.aciic.org.au/index.pl?page=101

Johnston, R. (2007), "Future critical and key industrial technologies as driving forces for economic development and competitiveness", paper presented at UNIDO Technology Foresight Summit, Budapest.

Johnston, R. (2010), "The impact of foresight: towards an assessment schema", paper presented at the second meeting of the International Foresight Professional Network, OECD, Paris, 1 March.

Ladikas, M. and Decker, M. (2004), "Assessing the impact of future-oriented technology assessment", paper presented at EU-US Seminar: New Technology Foresight, Forecasting & Assessment Methods, Seville 13-14 May.

Schartinger, D. and Weber, M. (2007), "Experiences and practices of technology foresight in the European region", paper presented at UNIDO Expert Group Meeting, Vienna, May.

Yoda, T. (2011), "Perceptions of domain experts on impact of foresight on policy making: the case of Japan", *Technological Forecasting and Social Change*, Vol. 78, pp. 431-47.

Yuan, B., Hsieh, C.-H. and Chang, C.-C. (2010), "National technology foresight research: a literature review from 1984 to 2005", *International Journal of Foresight and Innovation Policy*, Vol. 6 Nos 1-3, pp. 5-35.

Further reading

Johnston, R. (2010), "Methods and tools for breaking mindsets", paper presented at Foresight International Seminar: From Theory to Practice, CGEE, Brasilia, 16-17 December.

About the author

Professor Ron Johnston has spent his career addressing and explaining the ways that science and technology contribute to economic and social development, the possibilities for managing research and technology development more effectively, the processes and culture of innovation, and means for addressing the uncertainty of the future. Ron Johnston can be contacted at: Ron.Johnston@sydney.edu.au or rj@netserv.eng.usyd.edu.au

To purchase reprints of this article please e-mail: reprints@emeraldinsight.com
Or visit our web site for further details: www.emeraldinsight.com/reprints

This article has been cited by:

1. Mikko Dufva, Totti Könnölä, Raija Koivisto. 2015. Multi-layered foresight: Lessons from regional foresight in Chile. *Futures* 73, 100-111. [[CrossRef](#)]
2. Anna Sokolova. 2015. An integrated approach for the evaluation of national Foresight: The Russian case. *Technological Forecasting and Social Change* . [[CrossRef](#)]
3. Beata Poteralska, Anna Sacio-Szymańska. 2014. Evaluation of technology foresight projects. *European Journal of Futures Research* 2. . [[CrossRef](#)]
4. Cinzia Battistella. 2014. The organisation of Corporate Foresight: A multiple case study in the telecommunication industry. *Technological Forecasting and Social Change* 87, 60-79. [[CrossRef](#)]
5. Ekaterina A. Makarova, Anna Sokolova. 2014. Foresight evaluation: lessons from project management. *foresight* 16:1, 75-91. [[Abstract](#)] [[Full Text](#)] [[PDF](#)]
6. Peyman Akhavan, Majid Ramezan, Jafar Yazdi Moghaddam, Gholamhossein Mehralian. 2014. Exploring the relationship between ethics, knowledge creation and organizational performance. *VINE* 44:1, 42-58. [[Abstract](#)] [[Full Text](#)] [[PDF](#)]
7. H. A. Wolters, J. Gille, J. M. Vet, R. J. Molemaker. 2013. Scenarios for selected maritime economic functions. *European Journal of Futures Research* 1. . [[CrossRef](#)]
8. Peyman Akhavan, Majid Ramezan, Jafar Yazdi Moghaddam. 2013. Examining the role of ethics in knowledge management process. *Journal of Knowledge-based Innovation in China* 5:2, 129-145. [[Abstract](#)] [[Full Text](#)] [[PDF](#)]
9. Edmund C. Penning-Rowsell, Edward P. Evans, Jim W. Hall, Alistair G.L. Borthwick. 2013. From flood science to flood policy: the Foresight Future Flooding project seven years on. *foresight* 15:3, 190-210. [[Abstract](#)] [[Full Text](#)] [[PDF](#)]
10. Karel Haegeman, Elisabetta Marinelli, Fabiana Scapolo, Andrea Ricci, Alexander Sokolov. 2013. Quantitative and qualitative approaches in Future-oriented Technology Analysis (FTA): From combination to integration?. *Technological Forecasting and Social Change* 80, 386-397. [[CrossRef](#)]