Evaluating the anticipated policy impact of research outputs: introducing the SPEIDY framework

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Abstract

The Rural and Environment Science and Analytical Services (RESAS) division of the Scottish Government funds research expected to directly support the Government's needs for science-based policy. However, the pathway from research to policy impact is rarely linear, with impact often resulting from the interrelationships of many factors. Attributing a change in policy to research activities is therefore not straightforward, especially if, like RESAS, one wants to evaluate impact in a short timeframe after a piece of research is completed. Therefore, this study aims to scope for an appropriate evaluation framework to assess the anticipated policy impact of research outputs generated by RESAS' research providers. It intends to provide researchers with timely information on the expected contribution of their outputs to policymaking and the extent to which these contributions are likely to be realised: its main purposes are therefore learning and improvement. The framework was developed based on practices in Scottish Centres of Expertise and other organisations globally, as well as on current knowledge regarding the contribution of research to policy. Factors influencing the likelihood of research utilisation in policymaking were identified across the formulation, production and dissemination phases of research. The author is proposing a framework – termed Single-Product Evaluation for Immediate DeliveryY (SPEIDY) – which assesses these factors in order to provide a picture of the likelihood of research use, and which allows to characterise this use along four categories: conceptual, instrumental, political and/or imposed. The evaluation relies on a survey collecting feedback from the policymaking team, which takes less than four minutes to complete and occurs at the time of final validation of the output. The framework, which contains both a conceptual part laying out impact-related factors and an analytical part detailing the feedback survey process, participates in current efforts to mainstream evidence-based evaluation practices. It addresses current barriers to impact evaluation in the RESAS' research providers and its implementation could facilitate the uptake of best practices contributing to research impact.

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1 Background and objectives

1.1 RESAS and research

RESAS funding for research directly supports Scottish Government's evidence needs for science-based policy. RESAS-funded research is conducted by its Main Research Providers (MRPs) and Centres of Expertise (CoEs) through the implementation of 5-year strategic programmes. These entities are expected to deliver science which is not only excellent, but also accessible to policymakers and a wide range of stakeholders. The uptake of this accessible, actionable research is then expected to lead to positive impacts for Scotland as a whole.

1.2 The CoEs as structures dedicated to policy-oriented research

CoEs have been set up as focal points where Scottish Government and other stakeholders can come for advice on specific issues. They are also contributing to building Scotland's capacity in addressing future challenges, as identified by policymakers, academics and the broader stakeholder community.

CoEs are therefore at the forefront of policy-oriented research. CoEs' model for impactful research revolves around co-producing research with policymakers, which includes co-designing the projects' research questions, building relationships of trust, producing outputs tailored to policy needs and engaging in active dissemination. For instance, ClimateXChange (CXC) and the The Centre for Expertise on Waters (CREW) have Secretariats who act as central points to connect researchers and policymakers, playing an active role in fostering trust and facilitating knowledge exchange. Processes like placement of researchers in SG through CREW, or weekly briefing to Scottish

Government by researchers involved in the Centre of Expertise on Animal Disease Outbreaks (EPIC), are testimonies of strong relationships between research and policy, enabled by the CoEs. Furthermore, CoEs have been ensuring that research outputs are suited to a policy audience by producing deliverables such as policy briefs to convey key findings. CXC, CREW and EPIC have implemented a feedback mechanism in order to improve the quality of their outputs over time, based on inputs from end-users.

Nevertheless, evidencing impact from research conducted by CoEs is not straightforward because the pathway from research to impact is rarely linear and research is not the only factor contributing to policy design. Therefore, CoEs are currently developing methodologies to track and evaluate their impacts.

1.3 RESAS' interest in evidencing impacts

RESAS wishes to give its research providers feedback on the impact their outputs make on policy. Targets would be CoEs as well as the Main Research Providers and potential other future collaborators coming from more traditional academic environments. RESAS wants to provide this feedback in a short timeframe: because of the time lag between production of research and use in policy, it means evaluating the likely, or anticipated, impact of research. In particular, the currently implemented UK-wide Research Excellence Framework (REF) is not timely for RESAS' purpose, as it focuses on impacts which often take years before they can be valued. However, efforts towards impact such as the ones implemented by CoEs, are elements which could be indicators of the enhanced likelihood of use of research in policy.

1.4 Objectives and evaluation questions

The aim of this project is to scope for an appropriate evaluation framework to assess the anticipated impact of research outputs generated by RESAS' research providers on Scottish Government's policy. Based on practices in CoEs and in other organisations globally, as well as on current knowledge regarding the contribution of research to policy, the framework intends to provide researchers with timely information on the expected contribution of their outputs to policymaking and the extent to which these contributions are likely to be realised.

The two main purposes of the framework are therefore learning and improvement. The results could also be used for advocacy purposes towards research institutions and policymakers, to "make the case" for the value of policy-oriented research. The key evaluation questions are:

- How could the evaluated research output contribute to policy? In other words: What is the anticipated use of the output?
- Which research- and/or policy-related factors influence the output's anticipated contribution?

The framework intends to help RESAS have a better understanding of factors leading to research impact and to provide RESAS with practical options to evaluate impact in a short timeframe. It sits

within wider efforts in evidencing impacts from research, both from the Scottish Government and from research providers themselves.

2 Methodology

2.1 Data collection

A review of academic and grey literature was conducted to collect information on existing practices and available knowledge on research impact.

2.1.1 Existing practices in CoEs

During a scoping phase, informal interviews were conducted with representatives from the CoEs to understand how they viewed and assessed research impact. The interviews allowed to identify both public and internal documentation dealing with research impact evaluation in these organisations.

2.1.2 Existing practices in the UK and globally

A targeted literature review was conducted by pursuing two parallel search strategies. The first search identified relevant academic reviews using the keyword [“research impact” AND review] and ‘snowballed’ from them to identify further relevant documents. The second search used a more specific keyword combination [research AND impact AND (assess* OR evaluat*)] and covered both academic and grey literature. Academic literature review was conducted on Google Scholar and the Mendeley database, while the grey literature review was conducted on Google.

The geographical scope was global, but the search was temporally restricted to frameworks that have been published and / or have been used in the past ten years.

Exclusion criteria were applied to ensure the pieces of literature identified were relevant for our purpose. Publications describing and analysing discipline- or region-specific evaluation frameworks, with limited applicability to RESAS’ themes, were overlooked. It was also the case for publications which described either a specific application or a scoping study of an already identified framework.

2.1.3 Available knowledge on policy impact of research and factors leading to it

Theoretical and empirical publications identifying and / or analysing factors indicative of an increased likelihood of research impact were identified in the pool of results from the second search stream described above.

2.2 Data compilation

The collected publications were screened to identify information on aspects of interest for an evaluation framework. A list of aspects was discussed and validated at the scoping stage of the study:

1. Objective of the evaluation	8. Indicators
2. Approach to evaluation	9. Data collection method(s)
3. Definition of impact	10. Efforts needed
4. What is evaluated: impact or pathway to impact?	11. Roles and responsibilities
5. Unit of assessment	12. Evaluation format
6. Assessment method(s) / tool(s)	13. Limitations
7. Thematic areas of assessment	14. Sources
	15. Comments

Information was reported in an Excel table with 15 fields corresponding to the aspects listed above. Each table row was assigned to an identified evaluation framework or to a publication analysing factors indicative of research impact. To the extent possible, all fields were completed for rows dealing with evaluation frameworks; however, not all fields were relevant for literature on factors leading to impact. As a result, field 6 as well as fields 8 to 12 were left blank for rows assigned to publications. Factors indicative of impact, identified from these publications, were reported in field 7.

2.3 Data analysis

2.3.1 Overview of existing practices

A transversal analysis along each aspect of interest, i.e. along each field of the Excel table, was conducted to provide an overview of existing practices (section 3).

2.3.2 Conceptual framework

A conceptual framework was built to support the evaluation (section 4). It provides a way to understand the different contributions of research to policy and what drives them, as a foundation for determining the elements to evaluate. It was developed by synthesising lessons-learnt from existing practices as well as theoretical considerations on the research's impact on policy.

2.3.3 Analytical framework

The analytical framework is the set of processes for collecting and reporting evaluation data (section 5). It was developed based on the conceptual framework, current evaluation practices and lessons-learnt from feedback processes in place in the CoEs.

2.3.4 Added value of the proposed framework

A reflexion on the added value of the proposed framework was conducted (section 6). It involved appraising its contribution to the science of impact evaluation and comparing it to the structured feedback systems currently existing in CXC and CREW. These systems were analysed along three axes: coverage of impact-related aspects, efforts needed to fill in the form and process to collect feedback. The author relied on an analysis of the forms and on communication with key informants in the two CoEs to evaluate these three dimensions. In order to assess coverage (dimension 1), the forms' questions were mapped against the impact-related aspects identified in the conceptual framework. The author evaluated the effort needed to fill in the forms (dimension 2) using

information on the number and type of questions, and on average response rates communicated by the CoEs. Communication with the CoEs also provided information on processes for feedback (dimension 3).

3 Overview of existing practices

Twenty-five relevant evaluation frameworks were identified, in the UK and globally. This section explores how they relate to the evaluation questions. Therefore, the aim is to understand how the identified frameworks allow the evaluation of anticipated impacts and the consideration of single research outputs as units of assessment. Because of the interest in low-effort data collection strategies, the author also reports here a summary of the identified frameworks' data collection approaches.

Firstly, none of the identified frameworks explicitly aim at evaluating the anticipated impact of research; however, there is a category of practices which are concerned with the evaluation of processes and mechanisms contributing to achieving impact (16 out of 25). These process-oriented frameworks acknowledge the interactive and incremental nature of policy development and wish to break from traditional input-output approaches, which do not provide information on how impacts emerge (de Goede *et al.*, 2010; Bone *et al.*, 2017; Edwards and Meagher, 2019). Based on empirical evidence as well as concepts of social interactions and networks (Spaapen and van Drooge, 2011; Reed, Bryce and MacHen, 2018), knowledge translation and utilisation (Kok and Schuit, 2012; Redman *et al.*, 2015; Bone *et al.*, 2017), or theories of innovation (Riley *et al.*, 2018; Edwards and Meagher, 2019), process-oriented frameworks argue that a description of who did what, when, how and in which context, should be sufficient to assess the likeliness of future impact (CGIAR, 2008). Learning and improvement is the main motivation for opening the black box of mechanisms and factors which contribute to impact; nevertheless, identifying these “anticipatory efforts” can also be used to hold researchers or funders accountable for factors for which they are responsible (CGIAR, 2008; Kok and Schuit, 2012). The mechanisms and factors used in current practices are summarised in the conceptual framework presented in section 4, along with information from the wider literature on research utilisation in policy.

Although single research outputs are not considered as units of assessment in any framework, assessment tools and data collection strategies developed for research projects, programmes, institutions or disciplines could be transferable. Across the identified process-oriented frameworks, evaluation results are reported using impact narratives, logic models describing impact pathways, aggregate impact indicators, or network maps showing interactions between actors. Most frameworks (all but three) combine two or more of these tools to provide an impact picture. Impact narratives and logic models are the most used – in 12 and 6 frameworks respectively – with logic models being used to complement narratives in 5 out of 6 cases. In order to develop these “impact reports”, two main data collection strategies exist: nine frameworks use self-assessment by

researchers, while five use interviews, surveys, and/or document analysis by peers or third parties¹. The time and human resources required for both data collection and reporting can be estimated as quite high in most cases, due to the resources necessary to draft narratives and conduct interviews or desk research, but also due to the large units of assessment. At the lower end of the resource-intensiveness spectrum are frameworks which focus on research projects and use self-assessment or surveys to build standardised narratives and/or structured impact pathways (see two examples in Annex I). The analytical framework developed in this study, presented in section 5, builds on these current practices to propose a relevant and practical collection and reporting approach.

4 Conceptual framework: understanding the contribution of research to policymaking

The policy process involves complex and dynamic interconnections among different activities and stakeholders: usually, research is only one piece of the wide array of elements factoring in policy decisions (Riley *et al.*, 2018). Because research is intertwined with other factors, and because of the usually long time-lag between research and a specific impact, it is often impossible to ascertain the attribution of policy changes to specific research outputs (Boaz, Fitzpatrick and Shaw, 2009; Spaapen and van Drooge, 2011). Therefore, some have suggested to shift the focus of impact evaluation away from *attribution* to concentrate instead on *contribution*, thereby emphasising the processes of knowledge production and exchange leading to impact (Newson *et al.*, 2018). Contribution approaches are interested in the “small steps” and contextual factors which are known to influence research utilisation in policy (Spaapen and van Drooge, 2011; Riley *et al.*, 2018); they are the basis for the process-oriented evaluation frameworks introduced in the previous section.

I am proposing a framework which evaluates the expected impact of a research output following a contribution approach. Drawing on the literature cited above and in the previous section, one can understand the contribution of a research output to policymaking as follows:

- To support policymaking, a research output may be used for conceptual, instrumental, political or imposed purposes, – see Table 1 (Weiss, 1979; Kok and Schuit, 2012);
- The contribution of a research output is influenced by factors which occur during research formulation, production and dissemination. Either researchers, policymakers, or both, have a role in influencing the likelihood of research use – see Table 2 (Lavis *et al.*, 2003; Donovan and Hanney, 2011; Kok and Schuit, 2012; Redman *et al.*, 2015; Bandola-Gill, 2019; Edwards and Meagher, 2019; Wreford *et al.*, 2019);

¹ Two frameworks do not define data collection strategies and leave the choice to the specific evaluation context (Spaapen and van Drooge, 2011; Redman *et al.*, 2015)

- Contribution is also influenced by external factors (Lavis *et al.*, 2003; Donovan and Hanney, 2011; Kok and Schuit, 2012; Redman *et al.*, 2015; Edwards and Meagher, 2019).

These mechanisms are synthesised in Figure 1 and detailed in Table 1 and Table 2.

Figure 1: Conceptual framework illustrating the factors influencing impact across the phases of research formulation, production, dissemination and use. Factors are detailed in Table 1 and the four possible uses in Table 2

Table 1: Details on the factors influencing the likelihood of research contribution to policymaking

Research formulation	Research production	Research output
<p>Collaboration in problem-framing: factors influencing uptake, utilisation and impact can take effect before the research has even begun, when a policy or practice problem is identified, defined and translated into research questions (Edwards and Meagher, 2019). The joint design of research questions, attuned to policymakers' priorities, has been identified as a success factor towards research impact (Kok and Schuit, 2012; Wreford <i>et al.</i>, 2019).</p> <p>Appropriateness of research design: The research methods selected for producing the research output can help or hinder the subsequent impact (Wooding <i>et al.</i>, 2004; Edwards and Meagher, 2019). Elements such as sources of evidence, quality assurances or consideration of uncertainties are important factors (Donnelly <i>et al.</i>, 2018).</p> <p>Planning for impact: having clearly articulated expectation about the impact of research and associated mechanisms, from the outset, helps in realising it (Canavan, Gillen and Shaw, 2009; Reed, Bryce and MacHen, 2018).</p>	<p>Engagement of policymakers in research activities: a context of partnership between policymakers and researchers increase the chances of research contributions significantly (Canavan, Gillen and Shaw, 2009; Kok and Schuit, 2012). Two-way interactions in a relationship of trust is considered essential to creating research with any kind of impact (Spaapen and van Drooge, 2011; Redman <i>et al.</i>, 2015; Wreford <i>et al.</i>, 2019).</p>	<p>Appropriateness of content, format & timing: Adapting research outputs to the needs of policy audiences has been widely identified as a success factor. Accessibility of the output in terms of language and timeframe is important, as are its transparency and rigour (Landry, Amara and Lamari, 2001; Canavan, Gillen and Shaw, 2009; Kok and Schuit, 2012; Donnelly <i>et al.</i>, 2018; Edwards and Meagher, 2019).</p> <p>Active dissemination: direct interactions such as workshops or seminar are effective for discussing the meaning, application and interpretation of findings (Landry, Amara and Lamari, 2001; Wooding <i>et al.</i>, 2004; Canavan, Gillen and Shaw, 2009; Kok and Schuit, 2012; Edwards and Meagher, 2019; Wreford <i>et al.</i>, 2019).</p>
<p>Policymakers' receptive capacity: the extent to which a policy organisation has internal capacity influences contributions research is expected to make (Landry, Amara and Lamari, 2001; Canavan, Gillen and Shaw, 2009; Redman <i>et al.</i>, 2015). Capacity includes: the value placed on research by the organisation / individual policymakers, the tools and systems the organisation available to support research engagement; and the skills and knowledge of staff.</p>		

Table 2: Details on four possible uses of a research output in policymaking (Weiss, 1979; Lavis et al., 2003; Redman et al., 2015; Hyde et al., 2016; Edwards and Meagher, 2019)

Instrumental	Research is used in direct ways, such as to solve a specific problem or to develop content or direction of specific policy items.
Conceptual	Research is used to provide new ideas, understanding or concepts that influence thinking about policy. It has an impact on knowledge, understanding and attitudes of policymakers. Conceptual use involves a more general and indirect form of enlightenment than its instrumental counterpart (see below).
Political	Research is used to justify or lend weight to pre-existing preferences and actions. Also called ‘tactical’ or ‘symbolic’
Imposed	Research is used to meet organisational, legislative or funding requirements

5 Analytical framework: evaluating the contribution of a research output to policymaking

The analytical framework provides methods and tools for collecting and reporting evaluation data. Based on the conceptual framework, four main aspects on which to gather information can be identified:

1. The use policymakers expect to make of the output, in other words the expected impact they envision for the output.
2. The extent to which the output suits policymakers’ needs.
3. The processes for research elaboration, production and dissemination, as they pertain to the factors indicative of impact identified in Figure 1; and
4. Policymakers’ previous experience of working with researchers, as an indicator of their “receptive capacity” as defined in Table 1.

Based on current practices, a suitable data collection strategy is to rely on a survey of policymakers who were involved in the commissioning and production of the research output. For learning and improvement purposes, data collection should occur at the time of validation of the research output – this will allow both a swift feedback to research providers and an increased likelihood of survey completion by policymakers.

I am proposing a feedback form divided into four sections corresponding to the aspects listed above. The form is designed to take less than four minutes to complete: each section contains a list of

statements, from which users choose those most closely representing their view (see Annex II for a proposed list of statements). If they wish to spend more time, a comment box is available for them to provide details. Furthermore, I am proposing to start the form with a diagram inspired from the conceptual framework, providing a visual representation of the four sections and information on the form's structure (Figure 2). The diagram is supplemented by a blank timeline for the user to add future milestones where the output could be used. Building on experience from EPIC², I am proposing to integrate the form to the final draft of the research output, in order to maximise the chances of completion.

Figure 2: "Gateway" to the questionnaire and blank timeline

It can be expected that interpreting the filled-in questionnaire may not be straightforward for an academic audience not familiar with impact science. Therefore, raw results from the questionnaire may not meet the learning and improvement purpose of the evaluation exercise. I am proposing to address this issue by including in the analytical framework a guidance document intended for researchers receiving the filled-in feedback form. The guidance document introduces the researchers to the conceptual framework and specifies which components are addressed by which form questions (see Annex II).

The combination of the conceptual and analytical frameworks constitutes an evaluation approach termed "Single-Product Evaluation for Immediate Delivery", or SPEIDY (pronounced "speedy").

² EPIC's policy briefs include a comment box for policymakers.

6 Discussion

SPEIDY contributes to narrowing the gap between the practice of evaluation and research impact literature, and participates therefore in ongoing efforts to establish evidence-based evaluation practices (Canavan, Gillen and Shaw, 2009; Kok and Schuit, 2012). By adopting a process-oriented approach, SPEIDY provides an alternative to traditional input-output models of knowledge utilisation which, by failing to investigate the mechanisms leading to impact, provide little insight for learning and improvement. Because learning and improvement is indeed the main purpose of our framework, it was decided to situate data collection at the time of delivery of the research output in order for research providers to benefit from feedback in a short timeframe – both on the expected uses of their outputs and on the likelihood of these uses, depending on the processes and factors which took place during research formulation, production and dissemination. To our knowledge, no published framework has operated in that short a time span after research conclusion, nor has taken a single research output as unit of assessment.

While I am proposing here a novel framework, I recognise that Scottish Government research providers have been developing and implementing impact evaluation approaches of their own. Sending structured feedback forms at the end of a research project is a current practice in CXC and CREW, which prompted an investigation into the added value of the proposed framework compared to these similar practices. A study of their forms and overall feedback processes shows four areas where the proposed framework is expected to bring additional benefits. First, it allows for a more complete coverage of the mechanisms and factors contributing to impact. Although existing forms cover all components of the conceptual framework, aspects relative to research elaboration and production are only addressed by general questions such as “How would you rate project management and facilitation [...]?” which do not provide insight into the individual factors identified in the conceptual framework³. Second, SPEIDY is expected to reduce the burden on policymakers compared to current practices. Indeed, it only involves check-boxing statements, where current forms include a mix of open, closed and rating questions. While closed questions and scales are swift to address, open questions are likely to increase the time required to complete the questionnaire. Third, the proposed framework could allow for a better response rate than currently achieved⁴ because of its potential to address two major barriers: i. the turnover in policy teams and ii. getting policymakers to start the questionnaire. Indeed, the modular structure of the proposed form means that policymakers can pick sections corresponding to the project phases in which they were involved and leave the remaining sections blank. SPEIDY could therefore prevent dropouts due to a perceived lack of relevance of the questionnaire. However, it implies that the form is effectively accessed by policymakers, i.e. that policymakers effectively “open” the questionnaire. Our proposal

³ “Collaboration in problem framing” is an exception, as specific questions do address this factor.

⁴ Sitting at 20% - 30% in CXC’s case

to include the form as part of the final version of the research output sent for review could increase the access rate. Lastly, our framework provides a process for communicating feedback results to researchers, where current practices are mostly ad-hoc and opportunity-driven. Although some researchers involved with CXC and CREW request feedback after project delivery, a systematic approach such as proposed here would allow for a more widespread uptake of lessons-learnt.

As with any evaluation framework, there are limitations to our approach. First, the analytical framework heavily relies on the extent to which policymakers access and complete the questionnaire, which led us to prioritise swiftness of completion over narrative details. There is a risk that using statement boxes without mandatory free form questions lead to a lack of context which could prevent getting a full picture of the anticipated impact. SPEIDY therefore relies on the assumption that research providers, to which the feedback is addressed, are fully aware of the context in which research took place. The second main limitation of our framework is also a consequence of heavy reliance on policymakers for data collection. Although I am addressing current barriers to starting and completing the questionnaire, there is still uncertainty on whether response rates would be high enough to enable learning and improvement in research and policy communities. Another source of uncertainty potentially affecting learning and improvement pertains to the involvement of researchers in the process. Although SPEIDY attempts to facilitate this involvement by suggesting a user-friendly approach to presenting feedback results, there is still a hidden assumption that researchers are willing and able to make time, in already constrained academic schedules, to process policy-makers feedbacks. To address the two sources of uncertainty outlined above, participation in the feedback process could be included as a requirement in project contracts between researchers and policymakers.

I also recognise that other types of frameworks could have been developed to meet our purpose of learning and improvement: a possible alternative would be to build impact stories from previously released research outputs and follow their journey to impact using the conceptual framework. This type of narratives would provide learning opportunities for researchers and policymakers about success factors towards impact without relying on policymakers' reactivity. However, they would come with their own limitations, as they could feel disconnected to the specific context in which researchers and policymakers operate; furthermore, they would involve dedicated human resources to collect data and draft the narratives.

7 Conclusion

The objective of this project was to scope for a framework allowing to evaluate the potential impact of a research output. Drawing on existing knowledge and practices, a process-oriented framework was developed, termed SPEIDY, which focuses on the assessment of a set of factors known to contribute to research utilisation. These factors mostly relate to the interactions between researchers and policymakers and are spread across the research elaboration, production and dissemination phases. Furthermore, SPEIDY recognises that the influence of research on policy is

not limited to a direct, instrumental benefit, and attempts to provide a wider picture of impact by including conceptual, political and imposed uses into the evaluation. Because learning and improvement of research staff is the primary aim of the evaluation, SPEIDY proposes a feedback system from policymakers to researchers, for which data collection and reporting tools have been developed in order to minimise efforts from both parties. The framework could help improve current impact evaluation practices in RESAS' research providers by covering a wider range of impact-related aspects than currently, while reducing the burden placed on policymakers for the assessment. However, the approach remains to be tested in order to ascertain its benefits.

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Annex I: Two examples of evaluation frameworks

Forest Research's evaluation framework (Edwards and Meagher, 2019)

The UK public research agency Forest Research developed an evaluation framework as part of a five-year research programme aiming to improve “understanding, evaluation, communication and future generation of impact”. The programme started in 2015.

The framework addresses three key questions: 1. What changed as a result of the research? 2. Why or how did changes happen? 3. What lessons can be learned? Which actions should we follow to generate impact? Its main purposes are learning and improvement.

The framework offers a suite of categories of impact and pathways to help researchers explain impact, communicate it to the outside world and inform future actions. The framework challenges linear models to instead propose 'building blocks' to express dynamic interactions.

Table 3: Forest Research's Research impact evaluation framework.

<p>IMPACTS</p> <p>Ia. What changed? (Progress towards goals)</p> <ol style="list-style-type: none"> 1) Instrumental: changes to plans, decisions, behaviours, practices, actions, policies 2) Conceptual: changes to knowledge, awareness, attitudes, emotions 3) Capacity-building: changes to skills and expertise 4) Enduring connectivity: changes to the number and quality of relationships and trust 5) Culture/attitudes towards knowledge exchange, and research impact itself <p>Ib. Who changed? (Influencers and influenced)</p> <p>Stakeholder groups might typically include:</p> <ol style="list-style-type: none"> 1) Policy-makers: including regulatory bodies; local, national and international 2) Practitioners: public, private, NGOs 3) Communities: of place or interest, general public 4) Researchers: within and beyond the project and institution 5) Other <p>Ic. How do we know? (Evidence and feedback)</p> <ul style="list-style-type: none"> • Which indicators and methods should be used, and questions asked, to demonstrate impacts, and progress towards generation of impacts? 	<p>CAUSES OF IMPACT</p> <p>II. Why/how did changes occur?</p> <ol style="list-style-type: none"> 1) Problem-framing: Level of importance; tractability of the problem; active negotiation of research questions; appropriateness of research design. 2) Research management: Research culture; integration between disciplines and teams; promotion of research services; planning; strategy. 3) Inputs: Funding; staff capacity and turnover; legacy of previous work; access to equipment and resources. 4) Outputs: Quality and usefulness of content; appropriate format. 5) Dissemination: Targeted and efficient delivery of outputs to users and other audiences. 6) Engagement: Level and quality of interaction with users and other stakeholders; co-production of knowledge; collaboration during design, dissemination and uptake of outputs. 7) Users: Influence of knowledge intermediaries, e.g. 'champions' and user groups; incentives and reinforcement to encourage uptake. 8) Context: Societal, political, economic, biophysical, climate and geographical factors. <p>LESSONS AND ACTIONS</p> <p>III. Lessons learned for impact identification and generation?</p> <ol style="list-style-type: none"> 1) What worked? What could (or should) have been done differently? 2) What could (or should) be done in the future?
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Impact is evaluated at project-level: researchers fill in a self-assessment template structured around the aspects identified in the framework: impact types, causes and lessons-learned. A written narrative is then developed around these building blocks.

The framework was piloted on 12 case studies across Forest Research's activities and was reported to be user-friendly and fit-for-purpose. The evaluation process has led to “critical reflection, feedback, dialogue, analysis, planning and action” which could be transformative for future project implementation.

The modular approach to impact evaluation, as well as the different types and causes, informed part of the framework developed in this study.

ASIRPA: the French National Agricultural Research Institute (INRA)'s evaluation framework (Joly et al., 2015)

The ASIRPA project was launched in 2011 for purposes of internal learning and accountability. ASIRPA aims at assessing the impact of public research organisations using a standardised case study approach. The standardisation process has involved defining salient features to be analysed across the case studies, as well as tools to conduct the analysis. Our interest revolves around the features, tools and data collection methods used for *single* case studies, while the processes for an organisation-level assessment were considered out-of-scope.

Five dimensions of impact are included in the analysis: economic, environmental, social, health and political. They are evaluated using three tools:

1. A timeline highlighting the long time, multi-actor and contextual dimensions of impact by reporting main events in the institution's activities, creation of outputs and turning points in the external context (Figure 3);
2. An impact pathway showing the translation mechanisms by reporting inputs, outputs, intermediaries, impacts 1 ("outcomes" or "intermediate impacts") and impacts 2 ("impacts" or "ultimate impacts"); and
3. A vector of impact reporting in a radar plot the impact intensity for the five dimensions of impact.

The tools are embedded in a case study template allowing a self-assessment by Principal Investigators (PIs) and technology transfer officers. The evaluation process is considered to have an acceptable level of labour intensity: it was successfully transferred to half of INRA's 14 departments, corresponding to the involvement of over 40 staff members. The paper cited above reports that the evaluation process had positive effects on the self-motivation of research staff, especially technicians, and on external communication efforts. The authors have also witnessed an increased knowledge on impact-generating mechanisms, and the adoption of good practices.

Although ASIRPA is designed to assess research projects years after they conclude, its theoretical foundations informed the development of our framework. We have also included a timeline tool like the one developed by ASIRPA, in order to visualise expected future research impacts.

Figure 3: Hypothetical ASIRPA timeline

Annex II: Analytical framework

Annex II – 1: SPEIDY's proposed feedback form for policymakers

Annex II – 2: SPEIDY's proposed guidance document for researchers

Annex II – 1: SPEIDY’s proposed feedback form for policymakers

Feedback questionnaire on the Research Output

This questionnaire aims at understanding the expected contribution to policy of the research output you have just reviewed. Each box below corresponds to a section with a list of statements: select all that apply using the checkboxes. Please also fill in the timeline below.

The four sections are independent from one another and can be addressed in any order. Each section takes less than a minute to fill in and you will select around 20 statements in total.

The diagram illustrates the structure of the feedback form, which is divided into four main sections:

- Section I - Previous experience with research** (Page 2)
- Section II - Collaboration practices** (Page 2)
- Section III - The research output** (Page 3)
- Section IV - What do I expect will change because of the output?** (Page 3)

Section III is highlighted as the **Research output**. The form is organized into three main categories: **RESEARCH FORMULATION**, **RESEARCH PRODUCTION**, and **RESEARCH USE**.

Below the sections, there is a timeline section with the following structure:

STARTING DATE	CURRENT DATE

If possible, indicate milestones in this timeline

Add expected future milestones where the output could be used

Section I – Previous experience with research

- ☐ This was my first time commissioning a research output.
- ☐ In my view, research outputs should play a significant role in shaping policy.
- ☐ Research outputs are only one of many relevant pieces of information for shaping policy.
- ☐ I have worked with researchers before and always had smooth and effective collaborations.
- ☐ I have worked with researchers before, but some outputs did not fully meet my expectations in terms of method, content or format.
- ☐ I have worked with researchers before, but felt I lacked adequate tools or processes to collaborate effectively with them.

Comments (optional)

Section II – Collaboration practices

➤ Scoping phase:

Research questions:

- ☐ The research questions were defined solely by me as commissioner of the output.
- ☐ Research questions were mostly defined by researchers.
- ☐ I co-designed the research questions with researchers.

Methodology:

- ☐ I contributed to developing the research methodology.
- ☐ I did not contribute to developing the methodology, but I am comfortable with it.
- ☐ There are some methodological elements I don't fully understand, but I am nonetheless confident on the quality of the output.

Planning for impact:

- ☐ I have sat down with the research team to discuss expectations and plan for impact.
- ☐ I have not explicitly discussed the expected uses for the output with the research team.

➤ Research production phase:

- ☐ I was involved in producing research: for instance, I contributed to collecting data, gave insight for interpreting results, and/or directly contributed to drafting the final output.
- ☐ I was not directly involved in the research but was able to closely follow progress and give feedback, for instance via frequent progress meetings.
- ☐ I followed research progress thanks to regular meetings, but did not feel I needed to give close attention to every step.
- ☐ I followed research progress thanks to regular meetings, but wished I could have done so more closely.

Comments (optional)

Section III – The research output

- ☐ The content of the output provides answers to the research questions.
- ☐ The output is transparent in terms of methods and assumptions, and communicates complexity clearly.
- ☐ The output is written in plain language.
- ☐ The format of the output is suited to my needs in terms of length and/or level of detail.
- ☐ Findings are presented in a user-friendly way, e.g. using graphical or tabular elements.
- ☐ I have a hard time identifying the key findings and recommendations.
- ☐ The output was made available to me in a suitable timeframe.
- ☐ I had the opportunity to interact directly with the research team to discuss the meaning, interpretation or application of findings (for instance during a workshop).

Comments (optional)

Section IV – What do I expect will change because of the output?

- ☐ I intend to use findings and/or recommendations to solve a specific problem.
- ☐ I intend to use findings and/or recommendations to develop specific policy items.
- ☐ I do not currently have a clear view on how I could directly use the output.
- ☐ External factors could prevent me using the output in the foreseeable future.
- ☐ The output raises additional questions that need answering before I can confidently use its findings.
- ☐ I feel I have a more informed view on a specific issue or range of issues than before.
- ☐ The output has changed my perception of a specific issue or a range of issues.
- ☐ The findings and recommendations confirm the current direction of policy elaboration.
- ☐ I will be able to use the output to back the current direction of policy.
- ☐ The output helps me meet requirements (legislative, organisational...) but I am not sure how I will be able to use its findings and/or recommendations.
- ☐ I would welcome or create other opportunities to work with the research community.

Comments (optional)

Evaluating the anticipated policy impact of your research output

You have the opportunity to ask the policy team for feedback on the research output and the processes leading to it. The aspects on which you will ask for feedback have been identified as factors contributing to more impactful research from a review of current knowledge and practices. You will also get information on the expected policy uses for your research output. **Send the accompanying file “Questionnaire” to the member of the policy team to whom the output was addressed.**

The questionnaire you will share with the policy team consists in one figure directing them to four small forms taking less than a minute each to complete. The forms asks the policymakers to select statements which apply most to their perceptions. The figure also contains a timeline where policymakers can indicate expected milestones for the use of the output in policymaking.

You will be able to uptake the results from the questionnaire using the conceptual framework presented in the next slide. The coloured boxes indicate the different aspects on which policymakers were probed. Clicking on a coloured box will direct you to a slide explaining how it contributes to impact and making the link to policymakers' answers.

Conceptual framework for contribution of research to policy

Click on any of the 8 coloured boxes

Factors influencing impact during research elaboration

Section II of the Questionnaire – First block

Collaboration in problem-framing: Factors influencing uptake, utilisation and impact can take effect before the research has even begun, when a policy or practice problem is identified, defined and translated into research questions. The joint design of research questions, attuned to policymakers priorities, has been identified as a success factor towards research impact.

Which of statements 1 to 3 were selected?

Appropriateness of research design: The research methods selected for producing the research output can help or hinder the subsequent impact. Elements such as sources of evidence, quality assurances or consideration of uncertainties are important factors.

Which of statements 4 to 6 were selected?

Planning for impact: Having clearly articulated expectations about the impact of research and associated mechanisms, from the outset, helps in realising it .

Which of statements 7 or 8 were selected?

Factors influencing impact during research

Section II of the Questionnaire – Second block

Engagement of policymakers in research activities: A context of partnership between policymakers and researchers increase the chances of research contributions significantly. Two-way interactions in a relationship of trust is considered essential to creating research with any kind of impact.

Which statements were selected?

Policymakers' receptive capacity to research

Section I of the Questionnaire

The extent to which a policy organisation has internal capacity influences contributions research is expected to make. Capacity includes: the value placed on research by the organisation / individual policymakers, the tools and systems the organisation has to support research engagement; and the skills and knowledge of staff.

Which statements were selected?

Factors influencing impact, directly linked to the research output

Section III of the Questionnaire

Appropriateness of content, format & timing: Adapting research outputs to the needs of policy audiences has been widely identified as a success factor. Accessibility of the output in terms of language and timeframe is important, as are its transparency and rigour.

Active dissemination: direct interactions such as workshops or seminar are effective for discussing the meaning, application and interpretation of findings

Which statements were selected?

Expected uses for the research output

Section IV of the Questionnaire

How could the research output contribute to policymaking?

Instrumental use: Research is used in direct ways, such as to solve a specific problem or to develop content or direction of specific policy items.

Conceptual use: Research is used to provide new ideas, understanding or concepts that influence thinking about policy. It has an impact on knowledge, understanding and attitudes of policymakers. Conceptual use involves a more general and indirect form of enlightenment than its instrumental counterpart (see above).

Political use: Research is used to justify or lend weight to pre-existing preferences and actions. Also called 'tactical' or 'symbolic'

Imposed use: Research is used to meet organisational, legislative or funding requirements.

Barriers to use in policymaking

→ Were statements 1 or 2 selected?

→ Were statements 6, 7, 11 selected?

→ Were statements 8 and 9 selected?

→ Was statement 10 selected?

→ Were statements 3 to 5 selected?