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Intervention Logic

Evaluation of the introduction of theory-based planning at RCN

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Final report

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Summary

Most governments and their research and innovation funders are currently grappling with the need to re-focus their efforts towards tackling the so-called societal challenges and more broadly the UN's Sustainable Development Goals. This entails taking more account of the societal impacts of research and innovation. The use of theory-based planning is one of a number of initiatives RCN is undertaking in order to enable this shift in goals and perspective.

This document reports an evaluation of the introduction of theory-based planning at the Research Council of Norway (RCN) and has been commissioned by that Council. It is primarily intended to help RCN learn from its experience so far about how to derive further benefits from theory-based planning. To do so, it examines the effects of using theory-based planning to date via a mixture of documentary analysis, interviews and a survey of RCN staff.

Theory-based planning originates with evaluators' attempts to understand and assess the design of programmes. From there, it has filtered into the process of programme planning processes, and at RCN also into the planning involved in RCN's newly established portfolio management system. Its focus on understanding the effects of government intervention makes it particularly suitable for supporting RCN's shift in focus towards the societal challenges.

Theory-based planning has been introduced at RCN in parallel with a restructuring of the organisation from three to two governance levels, and a decision to abandon RCN's long-standing programming tradition in favour of planning at the higher level of portfolios. This has entailed compressing the planning effort from about 60 programmes to fifteen portfolios. Theory-based planning was introduced in two stages: first, at the programme level; then again at the portfolio level after the reorganisation.

We devoted a considerable effort to reviewing programme and portfolio plans and developing a critique of the way theory-based planning has been implemented across these levels. RCN's underlying planning practice is based on many years' experience and tends to produce well researched and argued plans. Theory-based planning was therefore retrofitted to a strong existing planning tradition. The resulting path dependency coupled with the inherent intellectual difficulty involved in theory-based planning demonstrates the need for well managed learning processes. We highlight at the operative level a number of improvements that can be made to planning practice.

The effects of using theory-based planning are naturally most visible in the planning process itself, establishing the desired closer connection between RCN activities and societal needs and effects. RCN culture has started to shift towards the desired increased focus on impacts. There are early signs that there will be second-order effects in intervention management, monitoring, evaluation, and choice of funding instruments. RCN needs to continue its efforts with theory-based planning, which meets overall policy needs. It should step up its training and learning activities for a period to help the new approach to bed in and to support the wider culture shift.

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1 Introduction and method

In 2016, RCN decided to adopt a theory-based approach – 'programme logic' – to help in programme planning, monitoring and evaluation. It was intended that this would make RCN more systematic in planning, monitoring and evaluating its research and innovation funding programmes. At a higher level, it provided a way to help RCN shift the focus of its planning further towards achieving societal impact. Focusing on impact is important in order to address the so-called societal challenges (especially, but not only sustainability) and more widely the UN's Agenda 2030 goals.

In 2018, RCN decided to abolish its programmes and to plan at the higher, more aggregated level of 'portfolios'. At that point, RCN modified its planning template and changed the theory-based approach used to some extent. At this point, the internal terminology changed from 'programme' to 'intervention' logic, underlining the move away from the programme level.

This evaluation was commissioned early in 2020 to evaluate and learn from the introduction of theory-based planning. At the time, the first generation of portfolio plans was still in the process of being written. Our evaluation process therefore first focused on programme planning and then turned its attention to the portfolios as drafts emerged. The people writing the portfolio plans had, almost without exception, earlier experience from programme planning, so we were able to observe and discuss the process of learning to do theory-based planning across both levels.

RCN's evaluation questions for this study were

- How has the introduction of intervention logic affected the way RCN plans, operates and further develops interventions? To what extent has it
  - Made RCN's programme planning and implementation more systematic and holistic?
  - Been used to generate more appropriate goals and activities?
  - Been used to generate performance indicators?
  - Been used as a tool to plan and support monitoring and evaluation?
  - Influenced the further development of RCN programmes?
- What effect has the introduction of intervention logic had on RCN's work to promote the societal effects of research?
  - To what extent has it clarified the links between funding activities and the goal to increase relevance to the societal challenges?
  - How has it affected the staff's understanding of and work with the societal challenges?
  - Has it influenced the way plans, calls and funding instruments are used?
- What are the characteristics of the programmes that have obtained the greatest benefits from intervention logic? For example, does the way intervention logic is implemented, developed and used appear particularly to affect the benefits of implementation logic?
- How can intervention logic be used in managing and generating plans for the portfolios?
- Have there been unanticipated negative consequences of the introduction of intervention logic?

In order to answer these questions, we reviewed plans and governance documents relevant to RCN and then compared plans for ten programmes written before the introduction of

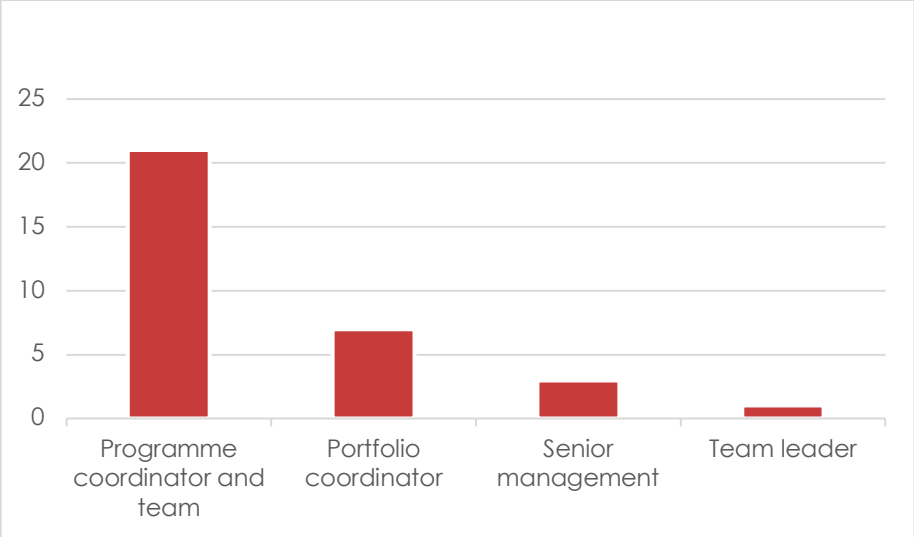
programme logic with their equivalents written immediately after its introduction. We later went on to review five draft portfolio plans to understand how they were using intervention logic.

We interviewed the coordinators of nine of the ten programmes analysed[1] as well as the coordinators of the five portfolios. In two cases these were the same person. We also received input about portfolio planning from programme coordinators who had been involved with planning portfolios other than the five we had studied in detail.

We went on to interview two members of RCN's Evaluation Group, nine members of RCN's senior management, four representatives of ministries responsible for matters related to RCN and the external consultant who provided the training seminars.

We also conducted a survey of people who had attended programme or intervention logic training courses in connection with the introduction at these tools (Figure 1). We sent out 72 invitations and received usable replies from 26 people, of whom 24 had coordination experience. Nine portfolio coordinators were invited to take the survey, of whom 7 did so. In such a small survey, an unattainably high response rate would have been needed to be statistically significant[2]. The responses are nonetheless indicative – the more so as they are consistent with what we heard in our interviews. We manually inspected the responses of the portfolio coordinators, which turned out to be very similar to the responses overall, so we read the survey results as informing us about the experience of intervention logic overall.

Figure 1 Survey respondents



N = 26 people responding out of 72 people invited (36%). Multiple responses were allowed to this question

The rest of this report is in four parts. The next Chapter discusses the use of a theory-based approach to programme planning and evaluation in general, placing RCN's use of theory-based planning into a broader context. Chapter 3 discusses the introduction of theory-based planning by RCN at both programme and project levels. It is largely based on our analyses of the various plans and is intended to be formative, i.e.to help RCN learn lessons from the introduction of theory-based approaches that we hope will be useful in improving practice. It is aimed mainly at planners, evaluators and those working with monitoring and reporting.

[1] Unfortunately, one person was unwell for a protracted period and no substitute was available

[2] At a 95% confidence level with a 5% margin of error, 61 responses would have been needed

Chapter 4 is more summative. It uses our document analyses, interviews and the survey to report our findings in relation to the evaluation questions – though of course it also has a formative role. Finally, we set out our conclusions and recommendations to RCN.

2 Theory-based programme planning and evaluation

In this section, we discuss the origins of theory-based programming and its relationship to programme design and management, and to policy learning in research and innovation funding.

There is a jungle of different terminologies with which to discuss theory-based approaches, but the underlying principles are rather simple. The purpose of using a theory-based approach is to explain how and why the planner expects a programme to cause changes that will lead to the programme goals being fulfilled. This builds a 'theory' about what the effects of the programme are expected to be, thus providing a basis for monitoring progress as well as generating data and hypotheses that will be useful in evaluation. In contrast to the traditional research council 'fund and forget' style of funding of 'basic' research, a theory-based approach focuses attention on generating impacts in society. This has been important ever since the emergence in the 1960s of the OECD doctrine that 'science policy' should connect science with social and economic growth goals and is even more important since the 21st Century 'turn' in research and innovation policy towards addressing societal challenges.

A theory-based approach is also consistent with wider governance reforms starting internationally in the late-20th Century. From the 1980s, the New Public Management movement promoted clearer goals in government interventions, the use of performance indicators and evaluation. The US Government Performance and Results Act of 1993 provided a major boost to this movement and accelerated the use of intervention logic – not only in evaluation but also in the design of policies (McLaughlin & Jordan, 1999). In Europe, this movement is continued in the EU's Better Regulation Framework.

Curiously, the roots of the theory-based approach are in evaluation, not in programme planning. Evaluation in the 1970s and before saw two methodological waves: first, a 'scientific' wave where the interest was mostly on control-group experiments; and then a 'dialogue-orientated wave, where evaluations were strongly based on participant's and stakeholder's perceptions (Vedung, 2010). Key weaknesses of these approaches include their inability to say much about the mechanisms of causation, and therefore to inform policymakers about how to improve performance. Using various forms of programme theory gave evaluators a way inside the 'black box' of causation (Stame, 2004) by providing testable hypotheses about how causes lead to effects. In principle, the programme designer sets out hypotheses or expectations about how the programme will achieve impact and the evaluator then tests those hypotheses against subsequent events. Historically, at least in research and innovation, theory was retrofitted to programmes by evaluators through document analysis and discussion with programme planners. Only later was programme theory taken up as a planning tool.

One of the earliest uses of programme theory was in the 'logical framework' approach to designing, monitoring and evaluating country-assistance programmes, which was developed for USAID in 1969-70 based on a year-long study of the evaluation of non-capital projects internationally (Rosenberg, Posner, & Hanley, 1970) and subsequently adopted by many other international aid agencies. The core of the logical framework is the claim that 'if we do certain **activities,** they will lead to **results** that will allow the **programme purpose** to be achieved and that will in turn contribute to achieving the **overall objective**.

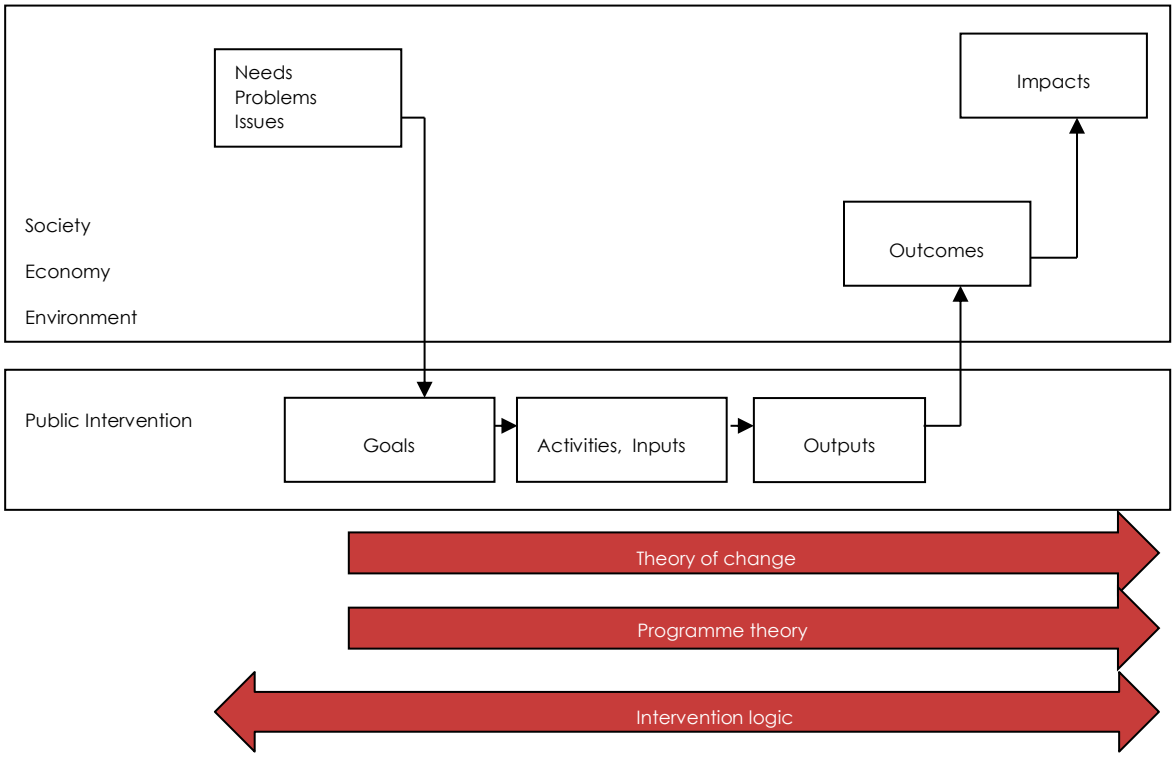
Over time, other members of the evaluation community and some, such as Carol Weiss who studied the relationship between research and policy, developed various versions of programme theory to try to reconstruct programme designers' expectations about how their programmes would lead to change and to clarify their goals. These were variously described as programme logic (Funnell, 1997), theory-driven evaluation (Chen & Rossi, 1980) (Chen H. ,

1990), theory of action (Schorr, 1997) and intervention logic (Nagarajan & Vanheukelen, 1997). Carol Weiss famously argued that in evaluation there is "nothing so practical as good theory" (Weiss, 1995) and went on to popularise the idea of 'theory of change' (Weiss, 1997). These concerns seeped into programme design practices.

After a series of administrative reforms at the end of the 1990s, the European Commission began to use programme theory in a patchy way in evaluations. Its use in both evaluation and design has become much more consistent since the publication of the *Better Regulation Guidelines* (European Commission, 2017). In Europe the approach is used by many innovation agencies and is advocated by the TAFTIE network of innovation agencies (of which RCN is a member)[3], but is still little used in the research council sphere.

Theory-based approaches lend themselves to illustration by way of logic diagrams, such as those currently used by RCN. Figure 2 provides a generic example that distinguishes between the societal and the programmatic level in programme planning and shows some of the more obvious links to the kinds of questions that can be asked in an evaluation. Behind this approach is the idea that policy interventions exist in order to correct various kinds of 'failures' in society, such as the 'market failure' (Nelson, 1959) (Arrow, 1962) that leads capitalist economies to under-invest in research. Western economies tend not to intervene if the problem identified will be solved by markets or other societal mechanisms acting spontaneously. In research and innovation policy, this idea of 'failure' has been extended to include 'system failure' and more recently 'transformational systems failure' in connection with sociotechnical transitions (Weber & Rohracher, 2012).

Figure 2 Theory-based programme planning and its relation to evaluation

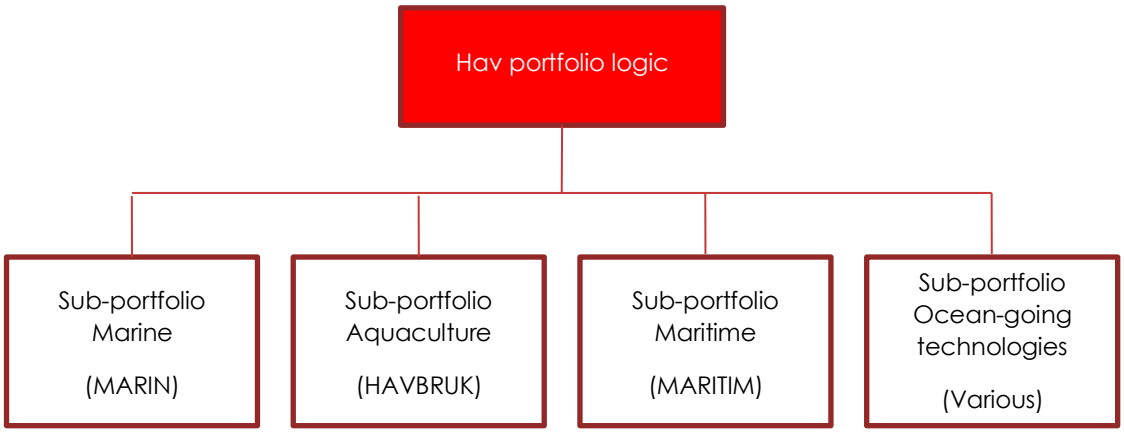


[3] www.taftie.org

Thus, an intervention originates at the level of society (or politics) through the recognition that a problem exists, taking a decision to intervene and setting some goals – in the belief that if the goals are reached, the problem will be solved. From that point, the intervention is passed over to an implementor, often a government agency, that breaks the intervention into small parts such as projects. These devote **inputs** provided by the political level to doing **activities** that produce **outputs**, which tend to be closely related to the beneficiaries of the programme. The production of these outputs has effects: initially **outcomes** – effects that are relatively close to the beneficiaries but that in turn trigger further outcomes – and eventually **impacts** at the societal level. A programme is successful if the outcomes and impacts fix the problem initially identified. Thus, the programme should tackle a societal problem and deliver solutions at the societal level.

Many aid organisations have adopted the logical framework, in combination with a participatory process for identifying problems and deciding what kind of intervention is needed, at the **project** level, in a workshop-based process called Goal-Orientated Project Planning (GOPP)[4]. At the project level, the contents of the logical framework, and the indicators associated with them, can be more specific than at the level of a programme, where the framework often has to be written at an abstract level in order to accommodate variety among projects. Some agencies (notably DFID, the former UK aid ministry that was recently absorbed into the Foreign and Commonwealth Office) address the problem of abstraction via 'nested' logics. These have a high-level and rather abstract logic, which is complemented by lower-level logics that are more specific about how the overall logic is to be implemented. The 'Hav' portfolio plan at RCN works in this way. It sets out an overall intervention logic for the portfolio, which is shown in a logic diagram. It explains that the overall portfolio plan is implemented through four sub-portfolios, as illustrated in Figure 3. The Hav plan does not offer logic diagrams at the sub-portfolio level (though these were generally contained in the predecessor programmes indicated in the Figure). That would require a diagram too large and complex to show on one page.

Figure 3 The nested logic of the Hav portfolio



[4] The process was developed by the German aid agency GTZ and was originally called ZOPP – Zielorientierte Projektplanung

Historically, concepts such as 'programme theory', 'intervention logic' and 'theory of change' tended to take the goals as given and analyse the subsequent logical steps to reaching impact and satisfying programme goals. Current EU usage refers to the entire logic – including the needs analysis and goal setting processes – shown in Figure 2 as 'intervention logic', and it is covered in the policy cycle approach taken by the European Commission in the *Better Regulation Guidelines* (European Commission, 2017). RCN programme and portfolio plans consider both problem analysis and the subsequent aspects shown in the Figure 2.

An important theoretical and practical distinction is between programme theory and intervention logic on the one hand, and theory of change on the other. The two former concepts can be illustrated through a logic diagram that shows what the activities, outputs, outcomes and impacts are expected to be. A theory of change goes further and tries to explain the **mechanisms** through which outputs cause outcomes and successive orders of outcomes cause impacts. In Weiss' terms, a programme theory become a theory of change when it is complemented by an 'implementation theory', i.e. an explanation of the mechanisms, assumptions and risks involved in moving from one box to the next (Weiss, 1995).

However, developing a fully specified theory of change – as opposed to a programme theory – requires a large amount of research and resources (Mayne, 2012). Two leading French evaluators, reflecting on their experience in trying to use theories of change in evaluations for the European Commission, say that the detailed theory of change needed is so resource-intensive to develop and test that it can at best only be used in one selected part of a programme theory. Hence the best tactic is to reserve it for steps in the logic that appear to be poorly understood (Delahais & Toulemonde, 2012). The same logic would presumably apply to using a full-blown theory of change in the context of programme design. A useful intermediate solution is the approach taken in logical framework analysis, which considers the assumptions and risks involved in passing from one box to the next in the logic diagram but does not devote the much higher level of effort needed to develop a full-blown theory of change.

A final, important observation on the use of intervention logic is that it focuses attention on the intervention designer's beliefs about how causes lead to effects. At the design stage, this means there is a risk of making invalid assumptions or not noticing that assumptions are being made. This is why the logical framework and theory of change approaches make a great fuss about trying to identify the assumptions involved in going from one box in the logic chart to another. Identifying 'killer assumptions' that would prevent the expected effects from occurring can lead to a need to redesign the programme – for example, to include a stakeholder group whose cooperation is needed. At the evaluation stage, over-focus on the designer's intervention logic can divert attention away from finding unexpected or undesirable consequences, so evaluations need deliberately to seek these out.

A second issue is the importance of the context in which the intervention operates in determining whether it succeeds or fails, which is wittily summed up by Pawson and Tilley (1997) in what they call the "basic realist formula": **Mechanism + context = outcome**. In research and innovation funding, the relevant 'context' tends to be the wider innovation system, and this implies that evaluations often need to take a systemic perspective, not focusing only on the contents of the intervention. The way RCN used theory in planning at the programme level did not explicitly take account of context. The portfolio planning template used in 2020 tackles context through consideration of the interventions of other actors. Periodic 'portfolio analysis' is intended to provide further information about the context of intervention – at least, within the portfolio.

Overall, therefore, the idea of intervention logic emerged from evaluators' need to understand causality and has filtered 'upstream' into programme design. It is expected to improve the rigour and clarity of intervention design, implementation, monitoring and evaluation and to encourage policy learning. The user has options about the depth of analysis, often opting for programme theories that describe a sequence of achievements but that are not so rigorous about the mechanisms connecting supposed causes to intended effects. More robust approaches exist but are very resource-intensive and in practice are therefore used sparingly. Intervention logic encourages the user to focus on the chain of effects intended by the programme designer, so both designers and evaluators need deliberately to test the robustness of the assumptions involved.

3 Introducing theory-based planning at RCN

This chapter is aimed primarily at people who coordinate portfolios or sub-portfolios and who work with monitoring and evaluation at RCN. It provides feedback on the way theory-based planning was introduced at RCN and how this technique has been used. We start by describing how theory-based planning was introduced and why there have been two versions of it: programme logic for programmes and then intervention logic for portfolios. Next, we discuss the feedback on the introduction process from the survey and interviews with coordinators. We then discuss programme planning and portfolio planning in turn. Most of the lessons about using and training for theory-based planning apply across both levels, so they are drawn together in a single section at the end of the chapter.

3.1 Introducing theory-based planning at RCN

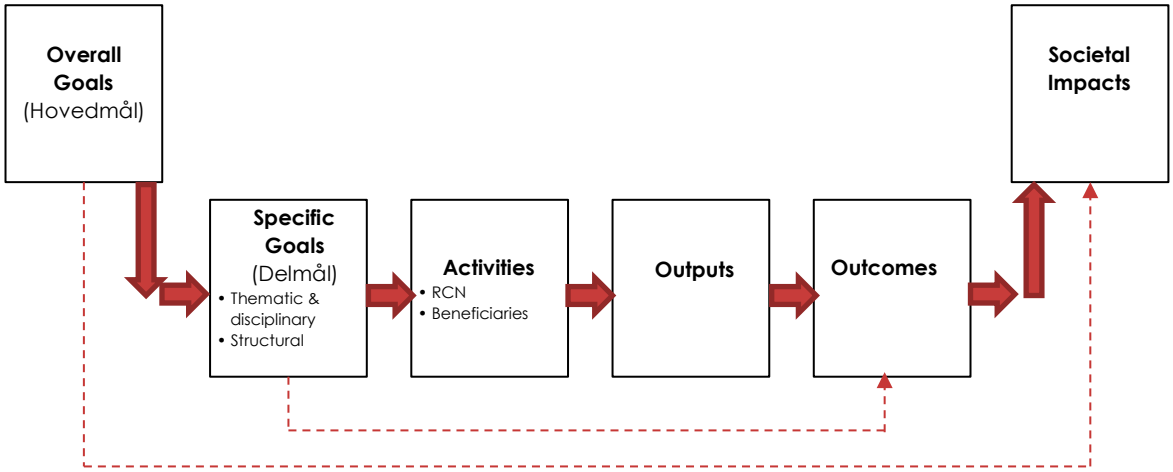
Following the decision to adopt theory-based programme planning, programme logic was used in developing the generation of new (or more generally updated) programme plans published around 2018. Relevant staff attended seminars in programme logic, provided with the help of an external contractor[5]. Both he and the RCN Evaluation Group offered support to programme managers in implementing programme logic, though there was limited take-up.

The training seminars for programme coordinators were followed up by a set of instructions including a template for a logic diagram to inform the use of programme logic. This mandated the use of the structure shown in Figure 4. It suggested that goals should be set at two levels: overall goals should be about effects desired in society; specific goals should relate more directly to the level of the research programme (as indicated in the dashed red lines in the Figure).

At this time, RCN had a three-level governance structure, with a Main Board at the top, four Division Boards in the middle and about 60 Programme Boards or committees, each answering to one of the Division Boards. This structure reflected the fact that RCN was originally created in 1993 by merging six pre-existing funding organisations – each with a Board and various programme committees – and putting a new Main Board on the top. In 1993, there were over 200 programmes, which RCN had managed to reduce to about 115 by 2000 (Arnold, Kuhlmann, & van der Meulen, 2001). In 2004, there were some 80 Programme Boards or committees involving about 700 individuals; by 2010, this had fallen to 45 Programme Boards and some 300 people overseeing 62 programmes. In addition, there was still a range of large, free-standing projects, networking measures and other interventions active (Arnold & Mahieu, 2012).

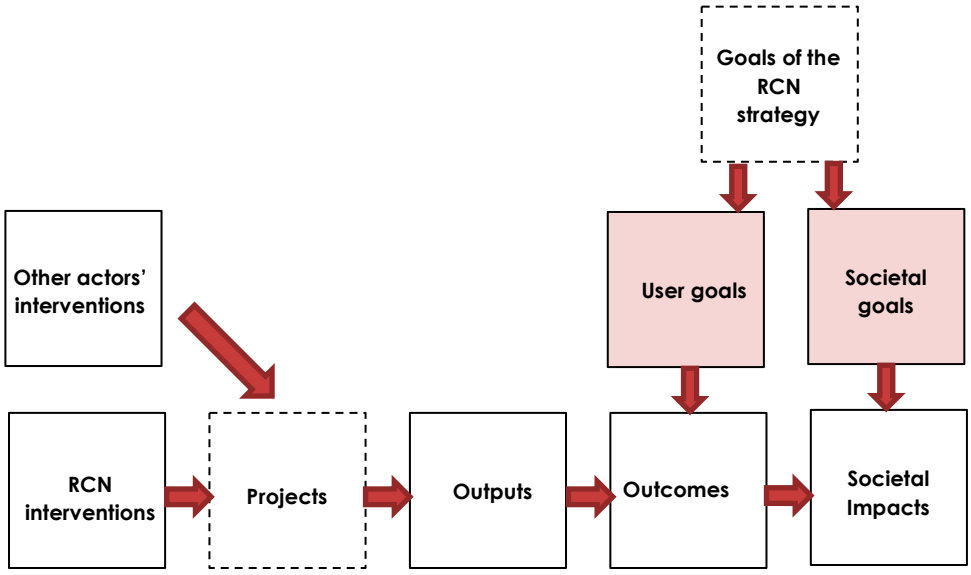
[5] Kjell Håkan Närfelt

Figure 4 Diagram for programme logic



Further simplification of RCN's funding programmes allowed RCN to restructure by abolishing the middle and bottom layers – four Division Boards and multiple Programme Boards – replacing them with 15 Portfolio Boards, which each inherited between one and a small handful of programmes. In 2019-20, each Portfolio Board had to generate a plan. RCN adopted a slightly more complex logical tool to support this process, which is referred to as 'intervention logic' in house. Again, there was seminar-based training followed up by support and sparring from the Evaluation Group. The planning template requires the use of intervention logic and the use of the diagram shown in Figure 5. This diagram is suggestive of a shift towards increased reliance on top-down policy signals in designing and implementing a plan at the portfolio level.

Figure 5 Diagram for intervention logic at the portfolio level



Source: Intervention logic template for portfolio plans

The shift to portfolio planning required a conceptual change. With or without formal logic, RCN's programmes have traditionally intervened to address various kinds of 'failures' (see

Chapter 2) that will not be corrected by markets or the routine operation of other social mechanisms. They have been driven by the identification of problems by the sector ministries and other stakeholders. In reducing the number and complexity of its activities and finding common ground among the problems and programmes, RCN increased the importance of its intermediary, coordinating and agenda-setting role. It was no longer simply a matter of responding one-to-one to the instructions of the ministries. Rather, RCN had increasingly to define bigger programmes that more than one ministry could sign up to. Bigger programmes necessarily have to take a more systemic perspective.They have been able to address increasingly complex societal needs by handling multiple themes and mixing together different funding instruments, types of research and members of the R&I communities. However, as programmes have become fewer and larger, RCN's interface to stakeholder communities through programme board memberships has become smaller. Concentrating RCN's activities into 15 portfolios has roughly halved the bandwidth of this interface – from 300 or so people in programme boards to about 170 in portfolio boards.

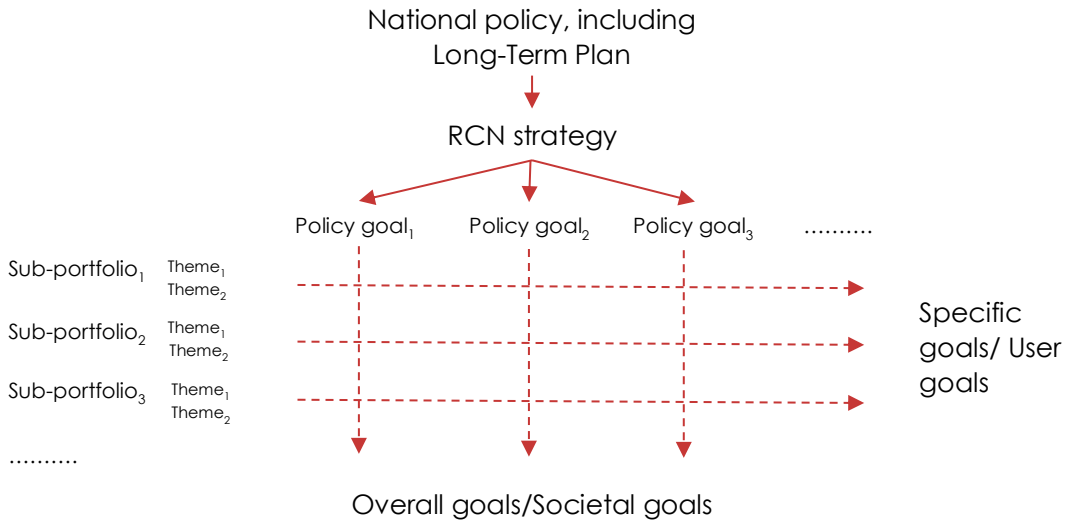
The 15 new portfolios are thematically defined top-down, so that they together cover the whole of the 'policy space' available for research and innovation funding. Since they are not problem-driven programmes but blocks of 'policy space', the portfolios need to take account not only of what RCN is doing in each area but also what others are doing, both nationally and internationally (especially in the EU Framework Programme). RCN conducts 'portfolio analyses' to inform the Boards of the situation of each portfolio. These analyses aim to cover all R&I-relevant actors and activities, so that RCN is in a position to coordinate with others. Each portfolio board is expected to analyse its territory, identify needs and intervene as appropriate. To this end it produces an overall portfolio plan covering the medium term. It then develops investment plans covering three years or so and implements these by making annual calls for proposals.

For the time being, at least, the ministries continue to budget and to try to steer RCN at the programme level, so the first-generation portfolio plans reflect these programme-level inputs.

Some of the portfolios more or less correspond to one of RCN's previous programmes. Others – such as Hav – span several former programmes, which we refer to here as 'sub-portfolios'. As we understand it, the portfolios represent the meeting-place between high-level policy goals, which are passed down from the Long-Term Plan for Research and Higher Education, sectoral strategies and other government documents via RCN's strategy to the Portfolio Board. At the same time, the sector ministries feed problems into the portfolios expressed, for the time being at least, in the form of programmes or (sub)-portfolios. Assisted by RCN staff, the Boards then need to do additional analysis across the portfolio as a whole in order to identify any further needs, and then to reconcile the resulting pressures for the portfolio to invest in projects.

Figure 6 illustrates the principle for complex portfolios, which are fed by multiple sub-portfolios (derived from problem analyses by ministry and RCN staff) with user and societal goals resulting from the interplay between top-down and bottom -up forces. In simpler portfolios there is in effect only one programmatic input. In both cases, the planners' task is to define a set of activities that satisfy as many of the user and societal goals as possible. As RCN's own portfolio analyses become more sophisticated, these can be expected to identify additional needs (for example, a need to build research capacity on a new subject), adding further goals.

Figure 6 Goal setting at portfolio level



3.2 Intervention logic training courses and in-house support

Our survey of people working with theory-based planning suggested that most of them had come across intervention logic in the past but that only a small minority had much practical experience of using it (Figure 7). Almost everyone felt the course was at least to some degree relevant to them and their job and almost three-quarters of them felt it was highly or very highly relevant to them. Almost everyone came away from the course feeling that intervention logic was at least to some degree a good tool; almost half the people felt it was good to a high or very high degree. Almost 90% approved of the length of the course and the level of detail into which it went.

Figure 7 The training session in which I participated ... (n=26)

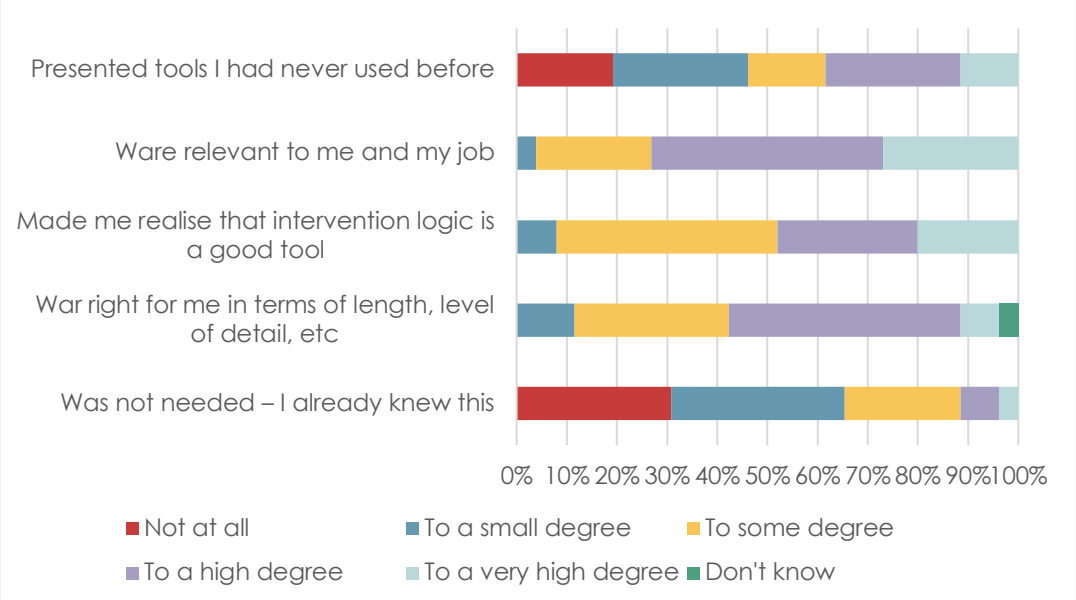
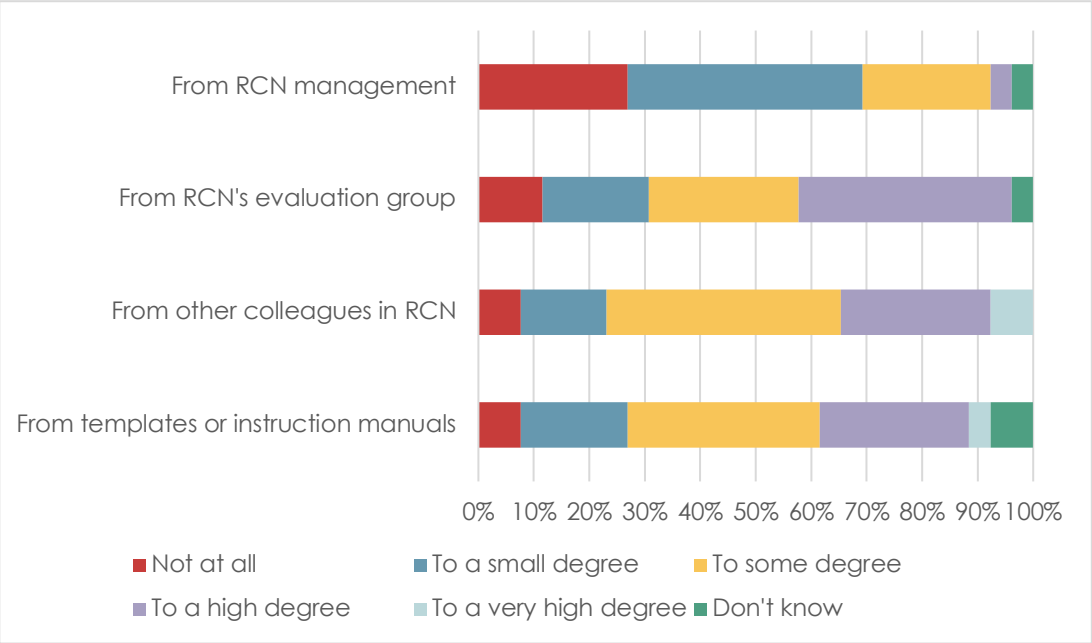


Figure 8 shows that the coordinators were to some degree or more supported by the Evaluation Group in implementing intervention logic – both directly and through the provision of templates or written instructions. Interviews suggested there were capacity constraints in the Evaluation Group, especially after the programme-level training courses were run. Other colleagues in RCN provided some help, but line management was not a source of advice or support in intervention logic. Interviews suggest this was because they were neither trained nor experienced in its use.

Figure 8 To what extent did you receive support after the intervention logic course ... (n=26)



All the programme coordinators we interviewed appreciated the course. The trainer himself provided some follow-up afterwards, but thereafter the coordinators could only go to the RCN Evaluation Group for help. Some said the Group was helpful in providing advice and support afterwards, on request, for example in areas such as formulating goals. Others felt they had not been sufficiently supported after the external trainer left.

Some coordinators observed that the courses were not in themselves enough of a basis for learning to use programme logic and that more support would have been helpful during the process of working with it for the first time[6]. It seemed easy to understand but turned out to be trickier to implement than it looked. Those who discussed the templates provided to them felt these were helpful, but some of the coordinators had difficulty in involving the portfolio boards in working with the intervention logic – they did the logic charts themselves and added them onto the plans.

Some coordinators in the humanities argued that intervention logic might be appropriate for fields that involve innovation but does not work well in humanities. One said this position reflected that of the programme board, which objected to the tendency of the logic to 'instrumentalise' research. As a result, the logic was used 'without enthusiasm'. Another

[6] This is consistent with our own experience of running public evaluation courses and also our internal training at Technopolis

coordinator working in the humanities said the programme board objected in a similar way but observed that working with it over time led to a greater appreciation of the possibility using logic gives to make connections with societal goals and impacts.

Portfolio coordinators said the intervention logic training was easier to handle than the earlier programme logic equivalent, since they already had training and experience from the programme level. More support was available in-house than earlier and was appreciated. One coordinator observed that intervention logic is far from new – it seemed strange for it to be introduced as something revolutionary.

While coordinators appreciated the personal support from the Evaluation Group, they felt that it would have been helpful to have more of it. The survey response similarly indicates a need for more support to staff in adopting theory-based planning tools. The programme (and portfolio boards) handled intervention logic with varying degrees of seriousness. Coordinators felt exposed because they did not have the skills or experience needed to moderate board meetings in order to work with such a structured method.

3.3 Theory-based programme planning

We read and compared recent plans of ten programmes, in each case looking at one plan written before the introduction of intervention logic and one written afterwards. We did this before interviewing programme coordinators so that we could obtain two independent perspectives on the change. It also helped us to be prepared for the interviews.

3.3.1 The programmes analysed

Table 1 lists the programmes and plans considered. In six of the ten cases, we were looking at the first plan for a programme and then at a revision of that plan while in a further two cases we were looking at the change from the first to a second revision.

Table 1 Programme plans analysed

Programme	'Before' plan	Type of plan	'After' plan	Type of plan
DEMOS	2015	First plan	2017	First revision
FINNUT	2014	First revision	2017	Second revision
FORNY	2011	Revision	2018	Revision after significant change
FORREGION	2014	VRI, last plan	2017	FORREGION, first plan
GLOBVAC	2014	First revision	2017	Second revision
HAVBRUK2	2016	First plan of 2nd programme	2018	First revision
HELSEVEL	2015	First plan	2019	First revision
IKTPLUSS	2014	First plan	2018	First revision
KLIMAFORSK	2014	First plan	2018	First revision
SAMKUL	2011	First plan	2018	Revision (3rd)

The VRI programme was ended three years earlier than originally intended as a result of a political shift, so here we were comparing the last VRI plan with the first plan of the successor programme, FORREGION. The FORNY research commercialisation programme has been

running since the mid-1990s. Here, we compared plans made before and after a significant change in the activities of the programme, when it stopped supporting capacity development in university technology transfer offices (TTOs).

The plans relate to programmes with a clear social purpose, though they vary in the extent to which they fund innovation activities in addition to research. (FORNY funds commercialisation, and essentially does not fund research.)

3.3.2 *The 'after' plans and their use of intervention logic*

RCN programmes arise through a combination of 'top-down' demands from the ministries and information about needs acquired by the RCN staff, programme boards and building on information in RCN's Knowledge Base (*kunnskapsgrunnlaget*). The annual policy cycle makes sure that these sets of influences meet. An RCN programme, therefore, has a double rationale, namely needs and policy. While the balance varied, most of the plans addressed both. FINNUT said little about policy, however, while FORNY said little about need.

Table 2 shows the instruments used by the programmes, which range from pure research programmes to ones that also involve innovation in business. Only half the plans justify their choice of instruments.

The plans are generally helpful in explaining the kinds of research and research topics wanted, setting out broad areas and giving examples of the kinds of topics it would be useful to explore. FORREGION and GLOBVAC set out research needs at a rather high level, compared with the others.

Table 2 Types of instruments used by the programmes

Programme	Funding instruments used
DEMOS	Researcher projects
FINNUT	Researcher projects and other researcher-related instruments
FORNY	Dedicated commercialisation instruments, not used in other RCN programmes
FORREGION	Dedicated innovation instruments, specific to the programme
GLOBVAC	Mostly researcher projects and related instruments, but some innovation instruments
HAVBRUK2	Mostly researcher projects and related instruments, but some innovation instruments
HELSEVEL	Mostly researcher projects, with some innovation. The plan marked the start of a requirement for use involvement in project design
IKTPLUSS	Mostly researcher projects and related instruments, but some innovation instruments
KLIMAFORSK	Mostly researcher projects and related instruments, but some innovation instruments
SAMKUL	Researcher projects. The plan introduced a requirement that all projects should have an international partner

Table 3 shows the overall goals of the programmes analysed. (In most cases, we have shortened as well as translating them.) Almost all these goals are testable, showing that programme managers know what success looks like and ensuring that evaluators have testable claims they can use as bases for making judgements. The goals describe what the programme will **produce**, as opposed to saying what the programme will do ("fund research"). GLOBVAC's overall goal is to "support research," though of a specific kind, so that is a testable

claim. SAMKUL simply proposes to fund research in certain themes. Such goals could usefully be revised so that they refer to more specific and testable changes in society.

Table 3 Overall goals of the programme analysed ('after' plans)

Programme	Overall goal (shortened)
DEMOS	Develop knowledge base for KMD policy
FINNUT	Improve quality and policy-relevance of education research
FORNY	Increased commercial use of research results
FORREGION	Increase in-company research-based innovation and links to knowledge infrastructure
GLOBVAC	Support research with potential for high impacts on health in poor countries
HAVBRUK2	Develop technology and knowledge to support profitable, ethical, sustainable aquaculture, feeds and fish processing
HELSEVEL	The overall goal is for research to contribute to increased quality, competence and efficiency in health, care and welfare services
IKTPLUSS	Strong research groups, ground-breaking projects, increased ICT labour supply, societal challenges, solutions to increase efficiency in industry and state
KLIMAFORSK	KLIMAFORSK shall lead to outstanding research and knowledge about the climate, for the benefit of society.
SAMKUL	The overall goal is to fund research about the cultural preconditions for societal development, strengthening and broadening the knowledge base for addressing societal challenges

The specific goals were presented in two ways, suggesting that the programme planning template has been changed at some point. Half the programmes offer a single list of specific goals; the other half present two lists: one of thematic goals, to do with what the programme is to research; and the other of structural goals, which aim to change aspects of organisational or institutional structure. In our view, splitting the specific goals into two groups provides clarity and a useful prompt to programme designers to think about both aspects.

Thematic specific goals were set at somewhat different levels. Certain programmes used the specific goals to set targets but did not explain why a target was one number and not another. In our view, the more successful plans told a clear and simple story of the form: we will reach (contribute to) the overall goal by attaining our specific goals. Thus, FINNUT's story is (freely translated) 'We will improve the quality and policy-relevance of education research by building research capacity, stimulating collaboration between researchers and knowledge users, improving research practices and disseminating the results of the research better than in the past'. These claims are refutable: an evaluator should be able to show when they have not been reached. They are simple and easy to communicate, testable, specific (but not arbitrary), and clear enough that the reader can easily ask herself, "Did they miss something out?" They also push the specifics of programme and indicator design down to the next level of designing the activities, when the programme designer asks herself, "OK, now **how** do we get the researchers and users to collaborate?" and so on.

In the cases we looked at, the goals all linked to the rationale: the combination of problem analysis and policy that demonstrates the need for the programme. The plans did not discuss whether reaching the specific goals was **sufficient** for achieving the overall goal. They did systematically describe other programmes and initiatives that were relevant, but they did not say much about how the programme being planned related to the others or more generally

about other parts of the **context**. In no case did they discuss the assumptions involved in adopting a particular set of goals.

One area where we felt the plans were especially impressive was in their discussion of the research opportunities they offered. Normally, they explained their thematic foci (though they did not always justify them) and then went into what seemed to us to be a useful level of detail about the kind of research areas and questions that RCN was interested in funding. These sections were clearly based on the combined knowledge of the ministries, programme boards and RCN staff and spoke directly to the researchers. A clear and simple presentation of the goals can help the research community to be creative in proposing research questions of interest to the programme.

Programme plan authors approached the **activities** in two ways. Four described the activities as the things RCN did, such as issue calls for proposals. Five described activities of the programme, rather than RCN. Of those five, three in effect said that their activities were equivalent to the funding instruments they used, while the other two had longer lists of programme activities. The remaining plan did not show the activities in the logic chart.

Those who used the activities column to describe RCN's activities, tended to put programme activities (projects, workshops, etc.) in the 'outputs' column[7]; some of them put additional outputs in the outputs column, too. This had the effect of moving the rest of the analysis one column to the right, leaving little space for analysis of the chain of logic leading to impacts. One of the logic charts (HAVBRUK) creatively used a fat activities column with RCN activities on the left and programme activities on the right, which left room for the normal outputs, outcomes and impacts analysis.

Most (7) of the plans did not explain their choice of funding instruments. Three did so, in a clear manner. As far as we could tell, based on reading the plans rather than any deep knowledge of the research areas they handled, the set of instruments used in each case was appropriate to the needs of the programme. These plans were written at a time when the set of instruments available was wider than is the case today. Two plans proposed modifications to the 'researcher project' instrument: one imposing a requirement for user participation; the other requiring that there be an international partner.

With the exception of the issue of putting programme activities into the 'outputs' column, the outputs, outcomes and impacts columns were quite well used. The level of abstraction was quite high, and the charts never descended as far as the thematic level. A result is that the charts were mostly quite generic, leaving programme management to grapple with the specifics of themes, structures and effects when subsequently writing calls for proposals.

Most of the 'after' plans proposed output indicators. By and large, these were conventional ones, overlapping heavily with those used in annual reporting. It was not clear that other indicators proposed connected in any way to ongoing monitoring and reporting processes in RCN. While some of the plans referred to the need for an evaluation at a coming point in the programme cycle, they provided no more information about evaluation needs.

Our impression in many cases was that the logic chart analysis was an 'add-on' to pre-existing thinking. From the document analysis, it was not clear that this part of the intervention logic added much value; it did not seem to have led to a reconsideration or deepening of the

[7] In a strict sense, the logic charts relate to the programmes, not to RCN. In our experience of doing intervention logic training, this difficulty of deciding whether the chart is done from the perspective of the funder or of the programme frequently appears, so it seems many people struggle with adopting a programme perspective rather than a personal perspective

previous planning work. Some of the plans had a short textual description of the outputs/outcomes/impacts logic; most treated the chart as self-explanatory. As a result, the realism of this logic was untested.

Few of the plans went into much detail about the context. We do not have enough information to offer a detailed critique of this aspect of the programme plans. However, for example, we noted that FINNUT was trying to help raise the level of research (and therefore education) in the old teacher-training colleges towards university level. We are about 20 years into that process, so the number of college faculty with PhDs must have gone up a lot, but we suspect there is still more to do and that the colleges tend not to do well in the competition with university-based pedagogy researchers. This was not discussed in the plan. Or in the case of FORNY, the role of the programme was not discussed against the context of the specific way the TTOs work in the Norwegian university system, which is largely based on a narrow, US-focused conception that is relevant for pharmaceuticals but is less relevant in a number of other branches. The template for portfolio planning took more account of context, which was a positive development.

Some of the plans referred to the results of recent evaluations and took account of the evaluation findings. Others said that it was about time to do an evaluation. However, the plans were so recent that there have been no opportunities for the intervention logics to feed forward into evaluation method. There was no mention of a link to monitoring. In a small number of cases, plans said that the programme contributed to one or more goals of RCN's overall management by objectives (MRS) system[9] but there was no detail. Proposed indicators were specific to the programme plans and appeared not to be systematically connected to annual programme reporting or other monitoring systems.

All the plans except that for IKTPLUSS and FORREGION used the standard logic chart layout. IKTPLUSS used the form: overall goal, specific goals, outcomes, impacts. FORREGION missed out the impact column. It also presented three separate diagrams, one for each funding instrument, thereby losing the opportunity to analyse synergies and programme-level effects.

3.3.3 Comparison

Both generations of plan strike us as generally well-written, competent and based on considerable experience both of programme planning in general and of the domain of the plan in particular. From our sample it appears that the plan that launches (or re-launches) a programme tends to be more detailed than the subsequent revisions[10]. The revised plans lean on the earlier analysis, as if the reader can be relied on to have seen it. Where changes are introduced, they are not identified as such and no explanation is given, so there is no record in the plans of how RCN has learnt from experience (or been told by a funding ministry to change course).

Introducing programme logic in 2016 meant that RCN caught a wave of plan revisions – only FORREGION is new. The revised template for programme plans largely adds analysis of activities, outputs, outcomes and impacts onto the back of the traditional way of writing plans. It calls for the use of indicators of results, while the earlier generation of plans did not include indicators.

[9] Mål og resultatstyring (MRS)

[10] It appears that the authors of the 2017/8 plans were told to keep their documents short. This would be another reason for the comparative lack of detail in some of the 'after' plans

Table 4 provides an impressionistic summary of the important differences between the individual programme plans. A number of the 'before' plans included a stakeholder analysis. This seems largely to have been dropped in the 'after' plans.

Table 4 Comparison of 'before' and 'after' plans

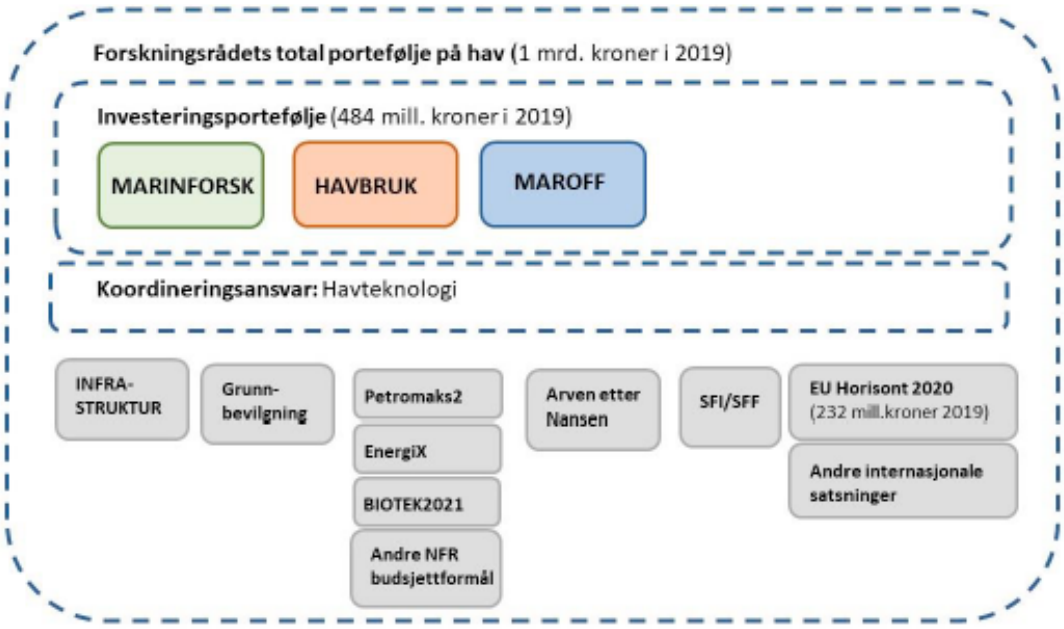
Programme	Comparison
DEMOS	'After' plan is mostly copy-pasted from 'before' and intervention logic is tacked onto the end, with no evident effects on quality. Lacks analysis of assumptions or additional activities needed to move from left to right.
FINNUT	Earlier plan was more detailed, eg explained more about international collaboration, stakeholders and users. The discussion of the research wanted is copy-pasted.
FORNY	'Before' is nuanced about industry structure; 'after' is more generic. The second assumes it makes sense to fund start-ups in sectors where there is no demand, which seems problematic. Second plan proposes continuation of the programme despite the recent lukewarm evaluation by NIFU
FORREGION	The 'before' plan relates to the VRI programme, so there is a considerable difference between the before and after programmes. The 'before' plan is more detailed in the rationale and contains a stakeholder analysis and more detail of the intervention context.
GLOBVAC	The earlier plan has a stakeholder analysis and is more detailed but has no performance indicators. Problem analysis, however, is better developed in the later plan and it introduces the need to involve users in design and implementation
HAVBRUK2	Earlier plan is more extensive than the later one. Both are well researched and written
HELSEVEL	Overall and specific goals were rewritten between the two plans but there seems little different in the plans themselves. The changes in goals are not described or discussed.
IKTPLUSS	The earlier plan is more detailed and specific. The specific goals of the 2014 plan reappear as the overall goals of the 2018 plan. The discussion of how to set priorities and structure the intervention disappears in the second plan.
KLIMAFORSK	The earlier plan is more detailed, especially about research needs. The overall goal is unchanged but two of the specific goals are changed, without explanation.
SAMKUL	Since it described a new programme, the earlier plan was more detailed.

3.4 Theory-based portfolio planning

We have reviewed a sample of five portfolio plans (Table 5). Since these have been simultaneously produced, they share a common structure. Compared with the programme plans we reviewed, the portfolio plans were more consistent in structure and more practised in their use of intervention logic – as one would expect, since they were written by people with experience of using programme theory in planning and the Evaluation Group was able to provide more support than had been the case with programme logic.

The template invited a discussion and definition of where the boundary of the portfolio lay. That is clearly important, if RCN is to maintain a set of portfolios that collectively cover the R&I system as a whole. The Hav plan explained the boundary rather well (Figure 9). The other plans focused only on the RCN and EU Framework Programme components.

Figure 9 Hav portfolio plan boundary definition



The requirement to consider the 'portfolio' of investments outside as well as inside RCN was an improvement over the programme planning process because it encouraged the portfolio planners to consider the context and to identify at least some of the stakeholders situated outside the circle of the portfolio board and the RCN staff attached to the portfolio. These first versions of the plans limit themselves to describing the context. The quality of the context descriptions iwa variable – Hav was particularly well done. The understanding of the context did not feed into the portfolio planning or decisions about how and whether to cooperate with others.

The portfolio plans did not take account of the relative sizes of different parts of the portfolio nor extend to decisions about where the portfolio board should make new investments and where it should disinvest. Those were to be handled separately in portfolio investment plans.

The goal hierarchy was clear but iwa not fully connected up. The RCN strategy set out high-level goals, based on the LTP and other parts of government policy. The portfolio plans explained to which of the high-level Strategy goals they could contribute. The portfolios did not have overall goals that were distinct from these contributions.

Table 5 Characteristics of portfolio plans studied

	Hav	Industri & Tjenestenæringer	Klimapolar	Utdanning & Kompetanse	Velkusam
Portfolio boundary definition	Includes RCN, other national and international funders	No analysis outside RCN + EU	RCN = 25-33% of funding. The rest is not discussed	No analysis	No analysis
Basis of goals	Policy	Policy and problem analysis	Policy and problem analysis	Policy and problem analysis	Policy. Problem analysis done while defining priorities
Clear link to RCN strategy?	Yes	Yes	Yes	Yes	Yes
Is the portfolio sub-divided?	4 sub-portfolios	No	2 sub-portfolios	4 themes	3 vertical and 1 horizontal themes
Are investment goals sub-divided?	4 sub-portfolios	3 themes based on old programmes	2 sub-portfolios	No	No
Output-Outcomes-Impact analysis?	Common set of outputs – but those shown are actually indicators, not outputs 4 sets of outcomes and indicators – one per sub-portfolio	One analysis for the whole portfolio	One analysis for the whole portfolio	One analysis for the whole portfolio	One analysis for the whole portfolio
OOI indicators used?	Only for the outputs	None	Only for the outputs	Example output indicators are given. Outcome and impact indicators are suggested but would be hard to collect	Limited indicators are proposed for OO and I
Activities	No overall analysis 4 sub-analyses provided	Whole-portfolio analysis	Whole-portfolio analysis	Whole-portfolio analysis	Whole-portfolio analysis
Logic diagram?	Standard	Standard	Standard	None	None, but 4 programme plans are appended
Antecedent programmes	MARINFORSK, HAVBRUK, MAROFF	BIA, FORNY	KLIMAFORSK, Polar Programme	FINNUT, LÆREEFFEKT, PROFESJON	VAM, SAMKUL, HELSEVEL

The goals of the portfolio plans were visibly more strongly influenced by policy than those of the programme plans we reviewed. Most of the portfolio plans provided problem-based analyses of the needs for intervention that helped justify the goals, but these appeared to depend more on secondary policy sources than did the programme plans. All the portfolio plans were linked to the RCN strategy and explained clearly what those links were.

All but one of the plans divided the portfolio into sub-portfolios or thematic groupings. Three of the five sub-divided the portfolio for the purpose of investment. However, the analysis of outputs, outcomes and impacts was mostly done as a single exercise. The exception was Hav, which showed a common set of outputs but then did a separate analysis of outcomes for each of the four sub-portfolios. Similarly, with the activities, Hav did an analysis for each of the sub-portfolios while the other portfolios did a single portfolio-level analysis. As a result of the disaggregation, the Hav plan was rather more specific about what the Board intended to do with the portfolio than the others we reviewed.

As at the programme level, the indicators suggested were rather incomplete and any connection to RCN's existing indicator systems was not discussed. Indicators focused on outputs.

Three of the plans presented logic diagrams based on the template provided. One had no diagram, and the remaining portfolio appendicised four programme plans instead. Our impression was that these diagrams had to be so abstract in order to fit on the page that they became generic and ultimately unpersuasive. The texts were, of course, more compelling. Overall, on our reading, the way the authors approached writing the plans implies that they might be more comfortable with a structure that tackles the portfolio level but then also nests programme-like sub-portfolios internally (see Figure 3). The investment plans could provide a way to bridge this gap.

The Hav and Utdanning og kompetanse portfolio plans illustrated two different approaches to describing a portfolio. While Hav maintained former programmes as sub-portfolios, Utdanning og kompertanse took three programmes and made them into a unitary portfolio. Such a portfolio is simpler and more elegant that the solution chosen by Hav. But it is worth noting that the Utdanning og kompetanse contained four closely related themes and addressed a fairly homogenous set of users, represented by the Ministry of Education and Research. Hav addressed areas as disparate as salmon lice and the use of AI in autonomous vessels and had several quite distinct sets of users tackling different problems in different parts of the economy. Logically, it would be possible to tackle Hav via a unitary portfolio and to push the diversity down to a lower planning level, such as the investment plan. Our sense is that that would make the portfolio plan so abstract that the portfolio board would barely be able to discuss it. Probably a period of trial and error will be needed before the portfolio planning process settles at an efficient and effective level of granularity.

3.5 Findings and suggestions for improvement in theory-based planning

The introduction of theory-based planning in the form of programme logic at RCN was well planned and orderly. At the earlier stage of addressing about 60 programmes, this was a tall order because of the need not only to teach the needed techniques but also to support colleagues as the techniques were put into practice. There were mixed signals about whether enough such support was available, but clearly there was demand for a 'help desk' function. Introducing intervention logic was less difficult – people had some relevant experience and there were fewer of them to be trained. RCN will of course have an inflow of new people who need training and support and the need to do theory-based planning does not arise very often so existing colleagues may need 'refresher' courses.

We know from bitter experience how difficult it is to produce a good intervention logic, so we expect there to be a learning curve, not an instantaneous mastery of the art. If RCN is to make serious use of theory-based planning, then the portfolio boards need to be more involved. That will test the coordinators' skills because they need to exercise a thorough grasp of intervention logic in front of an audience, 'moderating' board meetings. Some of the suggestions we make in this section in fact repeat things that are written in the programme and intervention logic templates but that have not in practice been taken up. Other suggestions imply that more practice is needed. We therefore suggest that RCN continue to run training periodically and that the Evaluation Group continue to be available to provide advice in cases where that is not available from experienced portfolio coordinators.

Overall, the quality of the programme and portfolio plans we saw is impressive. They have been written by people who know what they are doing, and that applies both before and after introducing intervention logic. However, the implementation of intervention logic did not overcome a clear path dependency in programme planning. The programmes existed and had been thought through before intervention logic was introduced. The introduction of intervention logic did not induce a rethinking of the programmes; rather, the planners obediently drew logic charts and stuck them on the end of what amounted to a minor reworking of the pre-existing programme plan. At best, the charts illustrated the programmes rather than reflecting a thinking process that drove their design. The introduction of portfolio planning is an opportunity to break the old tradition and to make the intervention logic the centrepiece in the planning process. We suggest RCN take this opportunity and exploit it to improve the quality of the planning process by taking better account of the context, stakeholders, assumptions and risks – as we discuss below.

RCN needs to clarify who the intended audiences are for the portfolio plans. Programme plans were written at a high level of specificity, informing the ministries funding them, documenting the agreement among the members of the programme board about what was to be done and explaining to the research community what kind of work the programme wanted to buy. The picture is less clear for the portfolio plans, which generally operate at a higher level than is relevant for the ministries and researchers.

We miss an element of narrative or storytelling in the plans, even though the planning templates – both old and new – invite the planner to explain her line of reasoning. The implicit story goes something like this.

- What is the problem to be addressed?
- What should the world look like when we have fixed the problem?
- How will we go about fixing it? What will be our role, compared with that of others?
- How do we expect our efforts at fixing it to translate into changes in the world?
- Will these changes in fact fix the problem?
- How can we monitor our progress and eventually demonstrate our success?

As readers, we would like to see the reasoning. Why these goals and not some others? Why these funding instruments? And so on. That would tend to demonstrate that some reasoning has been done and invite the reader to reflect on whether the logic is sound. In general, the plans communicate **what** is going on (here are the goals… here are the instruments…) but do not say **why** these are the right goals or instruments. Another element missing from the narrative is an explanation of why programmes change. We suggest RCN put more emphasis on introducing these narrative elements – not only for the benefit of the reader but also as a logical test of the choices made in the plan.

The intervention logics operate at a high level of abstraction. In particular, they rarely handle thematic aspects, consider differences among groups of potential beneficiaries or users, or otherwise segment the programmes and their effects. On the one hand, this is understandable. Going into thematic detail would significantly complicate the analysis. On the other hand, it implies a uniformity among actors and themes that is not always present in real life, creating opportunities for the programme planners to make unrealistic assumptions. Whether the detail is explored within the portfolio plans or separately depends on who the intended readers are. We suggest RCN consider making more active use of nested intervention logics (as the Hav portfolio does) where necessary, in order to assemble a logic that is complete and specific enough to be tested.

Setting goals is an art and was done in different ways in different plans. Ideally, goals tell us **where** we intend to go, not **how** we intend to get there. They should be refutable, so they should tell us about something we can go and look at. "Funding research" in a research council is close to being irrefutable: it is not a goal. Hence, in general, it is better to state goals using nouns than verbs.

It is very hard to pitch specific goals at the right level. Some of the plans are over-detailed here, for example in at least one case mixing up specific goals and activities. Specific (user) goals should be at a different level to overall (societal) goals. Specific goals should offer a story about the places we have to go on the way to reaching the overall goal. "Our specific goals are to make A, B and C. Doing so will **contribute** to reaching our overall goal." RCN should aim to set specific goals that refer to a desired situation and are not mixed up with indicators and targets. For example

- A specific goal could be to increase the size, scientific productivity and quality of the Norwegian aquaculture research community
- We can collect indicators that let us understand how and to what extent that goal is being achieved. These could include the number of active researchers in the field in Norway, the number of indexed publications they produce per head and some bibliometric indicators about their citation performance
- We could also set targets. To set sensible targets we will need a baseline. We might then want the number of researchers to grow by 25%, that the average researcher produces 1.25 indexed publications per year and that 15% of Norway's production of scientific articles in aquaculture are among the Top-10% most highly cited in the field. These targets give the community a more specific sense of what success looks like
- Setting targets additionally tests the realism of the budget – there needs to be some connection between the money available and the size of the task addressed by the plan

Most of the plans are based on a mix of needs analysis and policy goals. Ideally, the planner would unpack policy goals to expose the underlying needs and use them to start the intervention logic. Some policy goals – such as 'better quality research' – may not be derivable from a thematic needs analysis but can be identified specifically as coming from a policy requirement.

Another systemic issue is the relationship between the plans on the one hand and monitoring and evaluation on the other. One of the key functions of intervention logic is to help identify what to monitor. At present, some of the plans propose indicators but these are not actively used because RCN has a separate indicator system. RCN should encourage planners to identify which of its indicators are relevant in specific cases (at the sub-portfolio as well as the portfolio level) and consider whether additional indicators are needed adequately to monitor progress against the plan. Intervention logic also supports evaluation by providing hypotheses

about outputs, outcomes and impacts that evaluators can test. RCN should encourage evaluators to do so, while leaving the evaluator with freedom to consider alternatives and encouraging the evaluator to explore unintended consequences that, by definition, will not appear in the intervention logic.

We have a small list of suggestions about improving practice by doing more of what the planning templates suggest.

- There is confusion in a number of cases about whether the 'activities' in the plan should describe what RCN does or what the programme does. Strictly, the correct answer is 'the programme'. But HAVBRUK has creatively combined these together into a two-part 'activities' column, as suggested in the design template. This not only removes the confusion but also recognises that RCN has agency and takes account of it, so we would recommend planners to adopt this practice
- Plans could benefit from a more deliberate consideration of the context of the portfolio. Portfolio planners are invited to explain the context quite broadly, but in practice they devote most of their space to looking at research performers and funders. They should cast the net wider, more explicitly to consider the economic and social issues as well as the other actors that are relevant in defining the need for intervention and who act 'downstream' of research in ways that affect its impact
- Stakeholders form an important part of the context. We would encourage RCN to encourage more use of stakeholder analysis in the planning process. Some stakeholder groups can make or break a programme. As we increasingly address societal challenges and socio-technical systems in policy, it becomes increasingly important to engage wider circles of stakeholders in programme planning and implementation

A final observation is that the programme plans we have reviewed do not consider the effect mechanisms that connect outputs to outcomes, or outcomes to impacts. Again, this is called for in the templates but in practice planners tend simply to assume that one thing leads to another. Such assumptions are problematic. In the specific context of RCN's desire to organise and steer more via outputs than inputs – one of the reasons for moving from programmes to portfolios – they also reinforce a research funder's natural tendency to focus on the research and to ignore the societal dimension that is difficult to control.

We are reluctant to suggest trying to fix this by moving to a full theory of change approach, which would be immensely labour-intensive. The Logical Framework Analysis tradition has a less labour-intensive and more practical approach, which lies behind the templates' suggestions. Logical Framework thinking involves asking planners to brainstorm the assumptions they make when moving from one column to the next in the analysis and then to ask themselves whether any of the assumptions are unrealistic or risky. If so, how can the programme design be changed to become more realistic or to reduce the risks? This could, for example, involve including additional stakeholders or actors. That seems a better compromise between the current situation and a full-blown theory of change.

4 The effects of introducing theory-based planning

This chapter aims to be more summative than Chapter 3, focusing on what effects can be observed from the introduction of intervention logic. These are difficult to observe from outside the organisation, so we have relied heavily on interviews and our survey of coordinators.

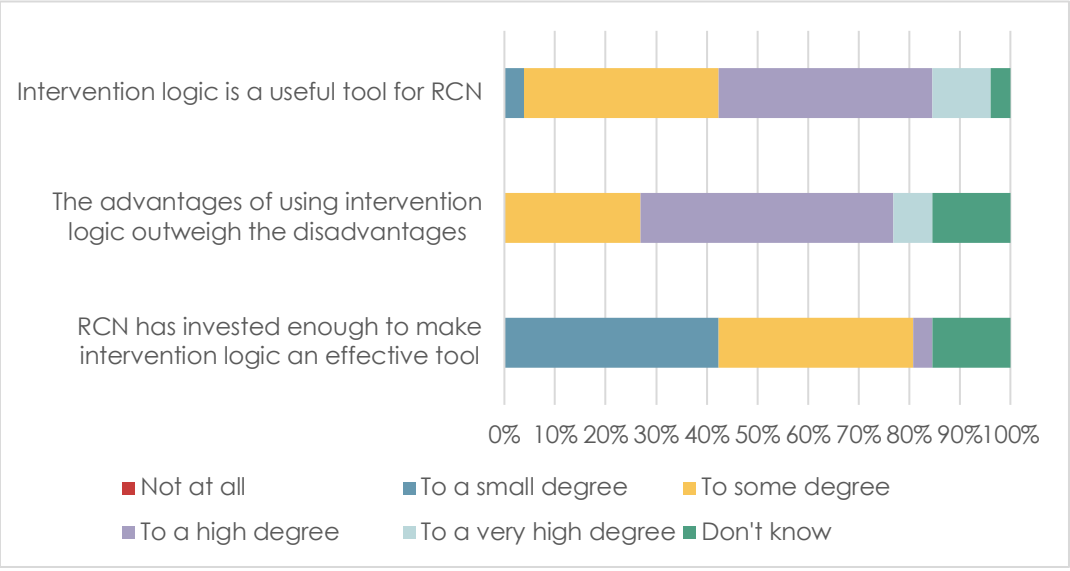
4.1 Effects on how RCN plans and operates

4.1.1 The value of intervention logic

Top management saw considerable value in intervention logic. Its most important attribute was that it should affect the internal culture of RCN – providing more of a common language and, above all, shifting the focus of attention from the funding process to societal impacts. It was recognised that this cultural shift would take time to be realised and that there was more to do. Intervention logic was one among other initiatives – including the change to portfolio management – intended to reorient the organisation.

RCN staff had a largely positive view of the value of adopting a theory-based approach to planning. The survey questions about the value of adopting intervention logic indicate that the plan coordinators are clearly positive (Figure 10), though not ecstatic (very few "To a very high degree" responses). Coordinators we interviewed also had positive views about intervention logic – with some variation from those who more or less said "We did it because the boss said so" to those who were mild enthusiasts to one or two missionaries. Most programme coordinators thought the use of intervention logic was an improvement on past practice but found it quite difficult to implement. They generally saw intervention logic as a good way to set goals but pointed out that it works at a level of abstraction higher than that needed to plan and manage at the thematic level. It does not tell you in detail what to do along a timeline – for that you have to develop a road map in addition. One reservation from Figure 10 is that the respondents clearly felt under-supported during the introduction of this new tool.

Figure 10 To what extent do you feel that ... (n=26)



4.1.2 *Programmes where intervention logic proved especially helpful*

Co-ordinators offered few views about which programmes got the most benefit from using intervention logic. This suggests that more use could have been made of peer learning among programme coordinators. Two of the survey respondents recommended that RCN run further workshops to support the use of intervention logic ahead of future planning exercises.

However, we also gained an impression from the interviews that intervention logic was most highly valued in areas dealing with regional and economic development or capacity-building. We infer that this is because those areas already have inbuilt a greater need than others to predict 'downstream' effects of projects. There was some resistance to the use of intervention logic from people in the humanities across programmes and portfolios. Some people also queried the relevance of intervention logic for basic research.

We were told that the Hav portfolio board was very comfortable with using intervention logic because the portfolio aggregates existing programmes that have legitimacy and that have been planned with the help of programme logic. Other boards apparently struggled to varying degrees and left a lot of the work to the staff. A key difficulty seemed to be with working at a high level of abstraction in the portfolio plan – in effect, losing contact with the thematic level, which is where the board members feel most comfortable.

The Hav board put a lot of effort into thinking about what actions were needed from others in order to realise the goals. The exercise also revealed inconsistencies of process among the old programmes. Welfare, culture and society's board also did some thinking about actions needed from others outside the portfolio, but there was little activity among the others that we discussed. Overall, as at the programme level, the amount of questioning of assumptions and risks along the impact logic was limited.

People in humanities boards apparently raised issues of academic freedom, in response to the clear push towards impacts that is inherent in intervention logic. Others tended to feel that intervention logic would shift RCN further away from the old 'fund and forget' culture and bring it closer to the ministries' desire to see impacts.

4.1.3 *Barriers to using intervention logic*

Learning to use intervention logic is surprisingly difficult in practice, so the time and effort involved are likely to have been barriers to its adoption. Some of the coordinators argued that RCN's work to reduce the number of funding instruments meant that they had to compromise and use general-purpose instruments in situations where they should have used more programme-specific ones. One particular problem mentioned was finding appropriate instruments to use with inexperienced applicants. Good project proposals often came from people who understood intervention logic and whose proposals could explain anticipated outcomes and impacts. One coordinator suggested it might be useful to ask applicants for an intervention logic in certain kinds of calls, such as capacity-building.

4.1.4 *Effects on programme design*

Portfolio coordinators said that the major effect of using intervention logic at the portfolio level has been on setting goals. At that level, the boards were able to connect the expected effects to the goals. RCN's internal monitoring systems and the reporting processes to the ministries live their own life, so there was limited contact between portfolio planning and performance indication.

The portfolio coordinators felt that intervention logic had provided a common language within RCN and succeeded in getting more attention paid to effects in the planning process. There is an expectation among some coordinators that the elegant portfolio and plan structure that

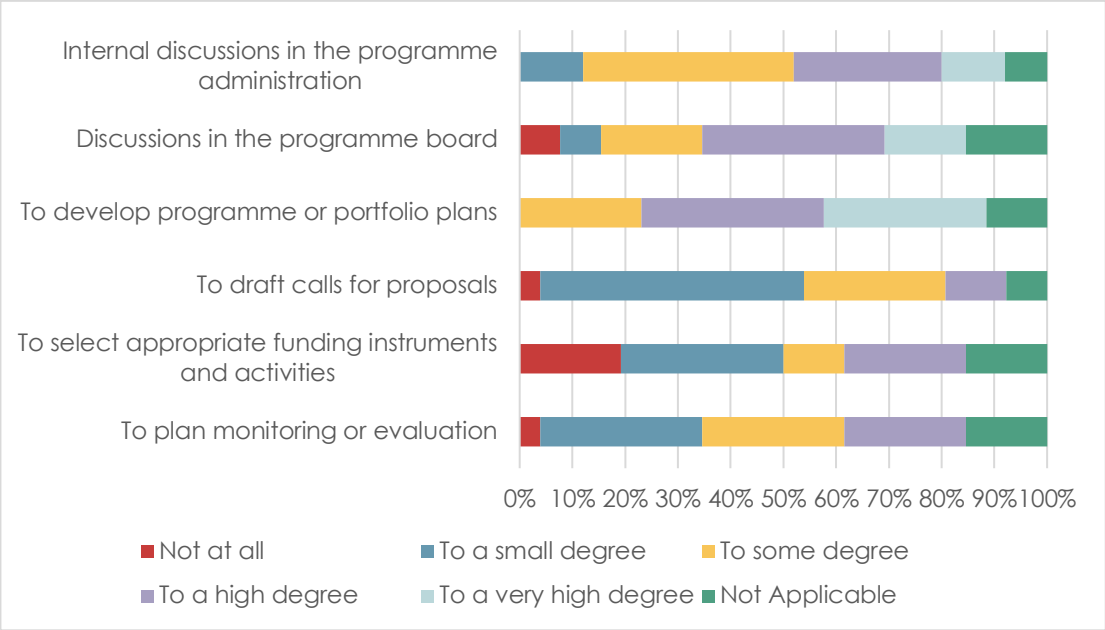
has been designed will make reporting to the ministries easier, but there is no real experience yet.

The survey suggested that the main benefits of intervention logic were in programme design (Figure 11) and the smallest in drafting calls or selecting funding instruments. The responses about the use of intervention logic in discussions within the staff and interacting with programme boards are consistent with the message from the interviews that it is establishing a common language or frame of reference within RCN's operations. There is a clear distinction between the plans and call levels – intervention logic does not replace the need to have more information and problem analysis at lower levels.

Portfolio coordinators said that the fact that the ministries still think in programme terms can make some of the calls complex – many ministry requirements (*føringer*) need to be brought together in a single call, so the documents risk being very long. The hierarchy of portfolio, investment plans and calls was felt to be elegant – it remained to be seen how it can be implemented.

The modest importance of intervention logic in relation to monitoring and evaluation reflects both what we heard in the coordinator interviews and the evidence from the document analyses and other interviews. At present, these connections are more theoretical than practical, given the parallel existence of RCN's internal performance indicator systems and the slow rhythm of evaluation. There was no case identified where intervention logic use had influenced the design of a subsequent evaluation.

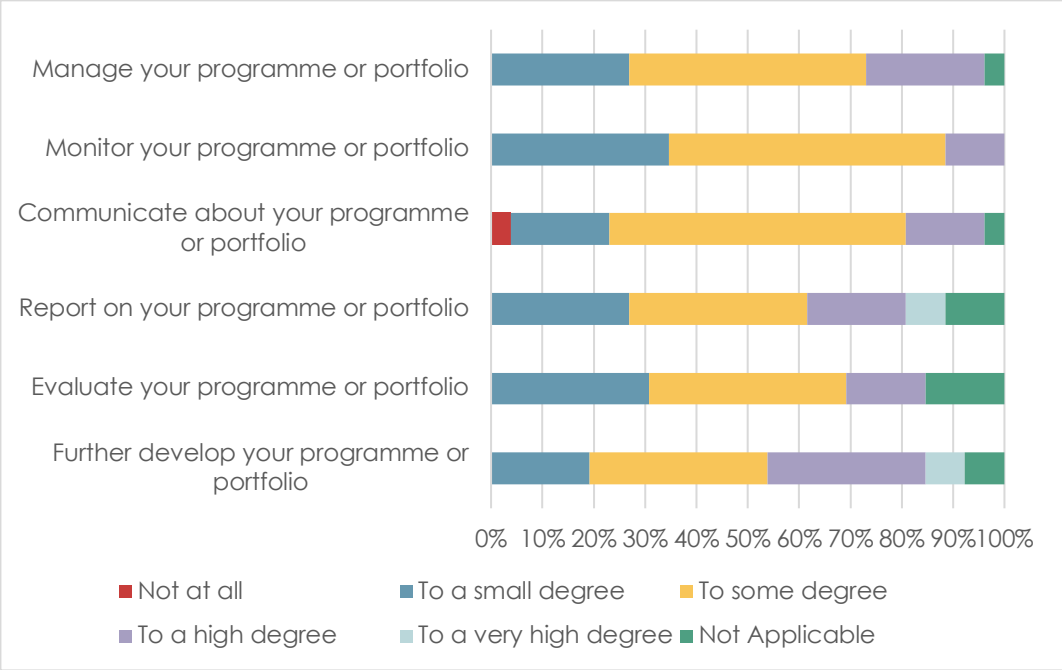
Figure 11 To what extent have you used intervention logic for ... (n=26)



4.1.5 *Effects on operating the programme*

The survey was similarly lukewarm about the effects of implementation logic on managing other aspects of the programme (Figure 12).

Figure 12 To what extent has intervention logic proved useful to ... (n=26)



The interviews confirmed our impression from reading the plans that the intervention logics were rather abstract – especially in relation to the societal goals they set – and left a fair amount of more specific work to do in running the programme. Intervention logics were not normally specific enough to provide a basis for writing calls. More work was needed at the thematic and organisational level in order to understand needs in a more granular way, before it was possible to write calls.

In practice, programmes had their established ways of monitoring defined for them by RCN's existing monitoring systems, the general Management by Objectives[11] system imposed on RCN by the ministries collectively, and the ministry-specific requirements for information. Some programmes, notably *Havbruk*, had additional indicator systems, which they used as part of their reporting to the funding ministries and as a contribution to the wider and international aquaculture-related communities.

While the intervention logic templates asked coordinators to suggest indicators, in practice where these were developed, they would be left dangling, not being relevant to current monitoring practice. This probably explains why so little indicator work was done in the programme plans.

4.1.6 Unexpected consequences

We were not able to identify unexpected consequences.

4.2 Promoting societal effects of research

There was broad agreement in the interviews that using intervention logic helped people think more and better about the longer term and connecting RCN activities to societal goals and

[11] Mål og resultatstyring (MRS)

impacts. It presented an important challenge to the old way of doing programme design, though many people found it hard to work with. People who had been involved in both programme and portfolio planning generally said that intervention logic was more useful in portfolio design both because the coordinators were by then more experienced in using it and because the portfolio plans started with a blank piece of paper, hence it was possible to work with a consistent logic from the start. Most of the programme plans were continuations of previous ones, so that the intervention logic had to be retrofitted to the earlier thinking. As one survey respondent said, "Oppgavene tilpasses logikken, mer enn at logikken er til hjelp for å dekomponere stegene i prosessen fram til samfunnseffekt". This proved hard to do and, in some cases, led the logic diagram to be an illustration rather than a driver of the programme design.

It was often (but not always) hard to engage the boards actively with the intervention logic. They tended to want to focus on thematic aspects of the plan, often leaving the burden of work with the intervention logic to RCN staff.

One coordinator pointed out that the effect logic provided an opportunity to think about negative as well as positive effects of programmes and therefore to consider how to manage these. The house style has long been to 'fund and forget', so intervention logic provides a useful countervailing force to this culture, though in at least one case the coordinator felt the effect logic part of the intervention logic had been effectively ignored in producing the programme plan. In another case, however, the coordinator used intervention logic to figure out how to change the programme in order to respond to criticisms in an evaluation.

At the same time, there was reluctance among some of the coordinators to become too engaged with the outcomes and impacts. These were in the future and beyond the power of the programme to control. One coordinator suggested that, while intervention logic is helpful for setting goals, making a road map of activities would be more useful for programme implementation than exploring the effect logic. A road map would help programme management plan its work, while the parts of the effect logic that were downstream of programme management were beyond RCN's control.

4.2.1 Assumptions, risks, stakeholder analysis

As we indicated in Chapter 2, theory-based planning can be done at different levels of detail, ranging from rather simplistic programme theories, in which the causal links between outputs, outcomes and impacts are simply assumed, to theory of change, where these links are explored in detail. It is clear from RCN's plan templates and the approach taken in the training courses that it wanted to follow the approach of logical framework analysis – namely, to brainstorm assumptions and risks, rather than to invest in the huge effort needed to develop a full theory of change. In practice, the plans focus on what is in the boxes in the logic diagrams, and there is limited evidence either from the plans themselves or from our interviews that assumptions and risks were much considered.

Most of the programme coordinators confirmed that they did not consider assumptions or risks. Some of them said they felt – with the benefit of hindsight – that their plans would have been better if they had done so. FORREGION stood out from the majority of the programmes in explicitly considering issues such as research capacity, the involvement of partners in projects and the ability of partnership members to work together. These considerations are well established in (regional) development and are in part informed by the systemic approach adopted in Smart Specialisation planning.

Both the programme and portfolio plan templates invited colleagues to consider the role and interests of stakeholders beyond the research and innovation communities. RCN's increasing focus on the societal effects of its funding makes it increasingly important to consider which

stakeholders are relevant to the funding and research processes and which are needed in order to ensure that the right goals are set and to anticipate which stakeholders need to be considered in the process of obtaining the intended societal effects. This can involve thinking about which stakeholders can be co-opted, whether powerful incumbents are likely to obstruct implementation and whether changes will be needed in regulations, laws, skill sets, market rules etc. in order to obtain the desired societal effects. The portfolio plans explicitly consider their funding context and explain who is directly involved in the research and innovation activities (typically companies, institutes and universities) but do not consider the role of stakeholders outside the R&I-funding and performing communities.

4.2.2 Effects on programme designs and instruments

Coordinators mostly tended to think that the effects of using intervention logic occurred at a high level – how people thought about programme design, with people starting to think more about effects over time. Few of our interviewees could say much about specific effects of intervention logic on call texts or their use of funding instruments, though one argued that increased goal-specificity supported the right choice of funding instruments. The survey confirmed that the use of intervention logic had not affected these aspects (Figure 11). Some interviewees tended to feel that while in a logical sense there should be a relationship between the intervention logic, calls and instruments, it tended to work at a high level of abstraction, making it hard to connect it to the thematic issues that needed to be handled in the calls. Others argued that the fact that intervention logic helped people think more and better about goals also led to increased focus (directionality) in the calls.

Producing intervention logics called for a simplified representation of the thinking. One coordinator felt this improved RCN's ability to communicate about the programme. More generally, however, survey respondents were no more than lukewarm about the extent to which the theory-based approach had helped improve communication (Figure 12).

4.2.3 Effects on planning practice

Coordinators were not able to see much change in RCN's programme planning practice at the overall level. Some mentioned more specific goals and language and better communications, because of the greater clarity of thought necessary for intervention logic. The introduction of intervention logic was recent and had not yet percolated fully through the organisation. It was likely to improve the planning and execution culture over time, but probably needed at least one more iteration before that would happen.

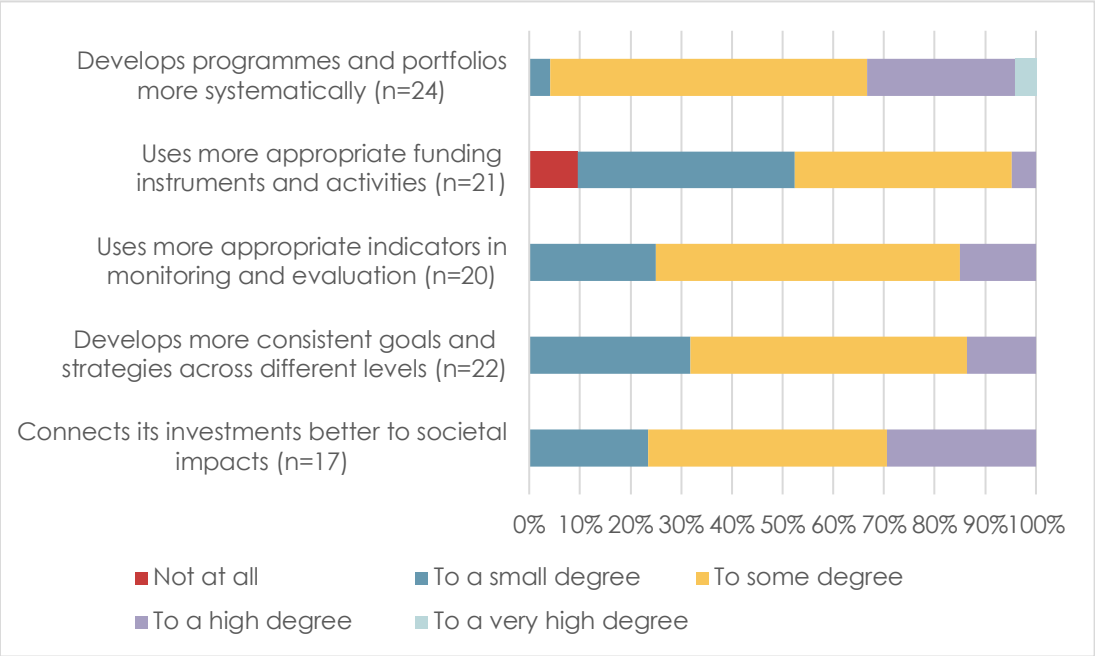
4.2.4 Effects on the RCN organisation

Figure 13 shows how survey respondents felt intervention logic has affected RCN as an organisation, as opposed to their individual practices. The number of "Don't know" responses is higher here than in other questions and they have been excluded from the Figure to make it easier to read.

The first bar illustrates that the main effect perceived on the organisation was to make programme and portfolio design more systematic. The interviewees also said intervention logic has helped standardise the way people think and created a common language that is more focused on effects than RCN's traditional funding culture.

Both the survey and interviews suggest progress towards connecting RCN investments better to societal impacts, though we read this as testimony to RCN having taken some first steps along that longer path.

Figure 13 To what extent to do think the use of intervention logic means that RCN ...



4.3 The view of intervention logic from the ministries

We approached five ministries for interview, in order to get their perspective. Two felt they had nothing useful to say and declined. The others felt they were rather disconnected from the question of intervention logic and wanted to comment more on the issue of portfolio management, so we report their observations separately here.

We were able to interview people at KMD, ASD and also KD, where we talked with one person representing KD's sector role and a second in the role of RCN's 'owner'. Our interviewees were broadly in favour of intervention logic as one component in a bigger pattern of RCN becoming more impact-orientated but took the position of being interested observers of the change rather than of being themselves much engaged in it.

All regarded intervention logic as very much an internal matter for RCN and that their key concern was that RCN should reach the goals the ministries required. In principle, the focus of intervention logic on outcomes and impacts was welcome and consistent with the ministries' philosophy of management by objectives. Two interviewees claimed that both RCN and the research community were becoming more focused on the effects of research over time. Intervention logic was part of a bigger trend and was not the only force pushing in this direction. One interviewee, who had had the opportunity to engage with intervention logic via their position as the ministry observer on a portfolio board, was positive: intervention logic was one of the factors making RCN's processes clearer, more systematic and consistent. However, a second felt that intervention logic encouraged RCN to try to measure effects that are outside its control and largely unmeasurable.

Our interviewees were rather uncertain about the value of RCN's move towards portfolio management, which seemed to have become a fashionable concept. Like intervention logic, this was also seen as an internal matter for RCN. Interviewees pointed out, however, that they budget and want to steer at the level of programmes, not portfolios. The concept of a portfolio at RCN is still a work in progress, so it was not fully clear what it would turn out to be.

On the positive side, the portfolio approach might give RCN more room for manoeuvre by creating 'spaces' in which to strategise 'in between' high-level political goals and needs at

the programme level. On the negative side, raising strategy development from the programme level to a higher level meant it was more likely to be dominated by the high-level, political goals and to become detached from problem analysis, which has to be done at the programme level. One interviewee argued that, while the audience for programme plans is clearly the research community, the audience for the portfolio plans was unclear. It was important not to lose the communication channel the programmes provided between RCN and the research and user communities.

5 Conclusions and recommendations

RCN initially introduced theory-based planning to improve the way it developed plans for R&I funding programmes. This intention was quickly overtaken by the decision to restructure RCN from a 3- to a 2-level steering hierarchy and the replacement of programmes by portfolios. Having to write the first generation of portfolio plans in the context of COVID-19 has not made it any easier for the organisation to learn to use theory-based planning tools. Indeed, a small number of respondents explicitly warned us that the turbulence of the last two to three years should not be allowed to obscure the value of intervention logic.

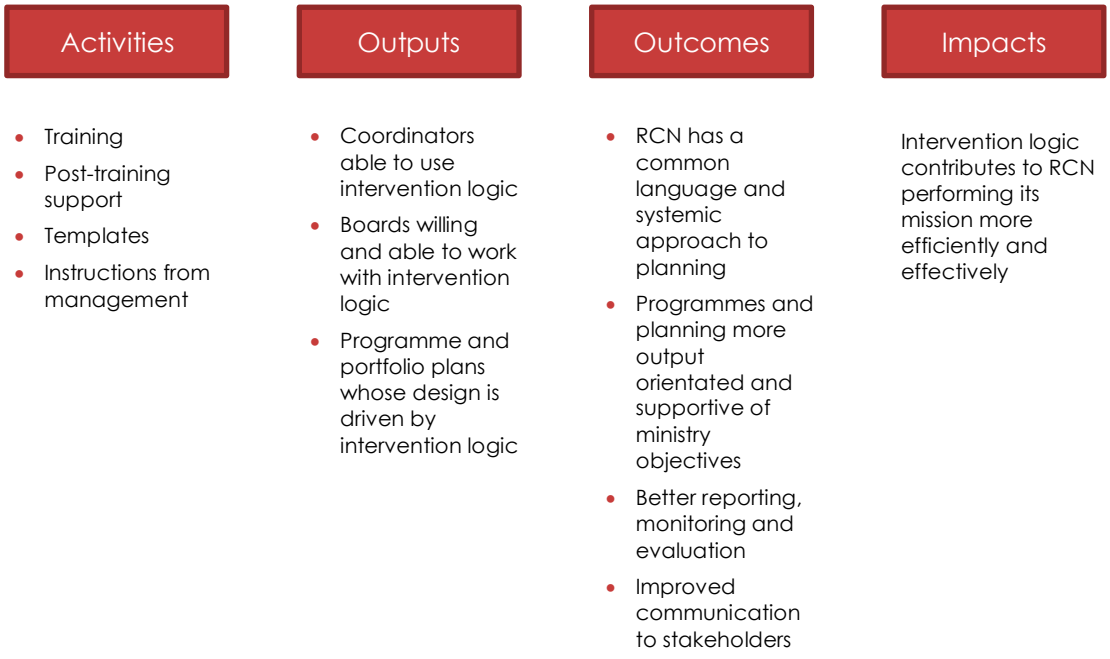
The conclusions we can draw rely rather heavily on looking at the introduction of programme logic at the programme level – partly because that came before the portfolios and occurred in a situation that everyone understood, and partly because the implementation of the portfolios is still a work in progress. However, intervention logic use at the portfolio level is in effect a continuation and extension of that at the programme level, so we can draw conclusions about theory-driven planning as a whole across these two stages.

In this final Chapter we first discuss the use of the theory-based planning. (Section 3.5 contains a rather detailed discussion and a set of suggestions about this at the operating level, which we do not repeat there.) We then explicitly answer RCN's evaluation questions for this study, as far as is possible. Finally, we draw out some higher-level recommendations.

5.1 Theory-based planning at the programme level

We have attempted to reconstruct the programme theory for RCN's introduction of original intervention logic in Figure 14.

Figure 14 Programme theory for the introduction of intervention logic at RCN



In summary, the activities seem to have been well performed. RCN underestimated somewhat the ease with which colleagues could learn theory-based planning, so the amount and scope of support needed were also under-estimated.

The outputs have partly been produced. Coordinators can indeed use intervention logic – but they need more training, peer learning and practice to do so well. A minority of boards have stepped up to the mark and made intervention logic central to their thinking. The boards benefited from an already high quality and established RCN planning system and few had the support and facility with the tool to make it central to their thinking. The programme and portfolio plans generally address outputs, outcomes and impacts better than before. This is because intervention logic and a more results-orientated culture have been retrofitted, not because theory-based planning has been central to the way they have been designed.

Among the outcomes, there is evidence that RCN has more of a common language and is better equipped to plan than before, but progress on delivering the other expected outcomes is at best spotty so far. While it is important not to under-estimate the importance of culture in shaping performance, it is too soon to see much solid evidence that intervention logic has had an impact on RCN's overall performance of its mission.

At a more detailed level, the training seems largely to have gone well. Coordinators appreciated and felt they understood it. However, it is a big jump from a training session to using intervention logic in real life: what looks simple in the classroom turns out to be quite hard to do in practice. RCN's Evaluation Group provided support to programme coordinators, which was regarded as helpful. However, with many programmes and limited capacity in the Evaluation Group, there was less support than some of the coordinators felt was needed. The second time around, when the intervention logic training was done for the portfolio coordinators, the participants felt they coped better. This was partly because they by then had some practical experience of intervention logic from the programme level but also because there was more capacity available for supporting them.

The Evaluation Group produced templates for developing both the programme and the portfolio plans. These have broadly been followed, though insufficient attention has been paid to context, stakeholder analysis, assumptions and risks involved in the logic. There is some variation among the programme plans because the template changed at least at one point and because they inherit a lot from their predecessor programmes. In almost all cases, the first programme plans to use intervention logic were extensions or variations of established programmes. Therefore, rather than driving the programme designs, the intervention logics were retrofitted, and the logic diagrams are in practice illustrative. They are not much explained or discussed in the plans and there is almost no analysis of risks or assumptions. In most cases, programme designs were driven by RCN staff and only in a minority of cases was it possible to engage the programme boards in preparing and working with the logic diagrams. This appears to have been partly because this was a new tool that addressed the whole programme, while board members tended to be more interested in the thematic elements, and partly because the coordinators were not yet experienced at moderating groups that worked together on logic diagrams. A number of the plans contain 'rookie errors' such as mixing up activities, outputs and outcomes, or conflating some of these with indicators, that suggest the coordinators – and, indeed, the programme boards – simply needed more practice.

These teething troubles do not appear to have had a significantly negative effect on the quality of the programme plans, which is solid and rests on a long-standing programming tradition at RCN. The important effects of intervention logic have, according to the survey and interviews, been on the orientation of the planning work. There is broad agreement that it has supported RCN in focusing planning to a greater extent than before on the societal effects of R&I. It has generated a common language and a common sense of a need to pay attention to these aspects. But more work is needed to reorientate planning towards impacts to the extent that appears to be necessary in order to deal appropriately with the societal challenges.

Like most research funders, RCN has in the past had something of a 'fund and forget' culture, where the thinking is dominated by the research and the projects. Some colleagues have found it uncomfortable to be forced to think more about effects, especially as these are not under the control of RCN. But a clear message from the interviews is that – in conjunction with other changes, such as the introduction of impact statements in proposals and evaluations and the ministries' growing emphasis on effects – intervention logic is contributing to a culture change. Such a change is additionally important because of the shift in policy focus towards the societal challenges, where understanding and managing implementation is more important than for traditional R&I policy. In our view, this is a significant first step – but to respond to the overall policy need to increase the focus on effects in addition to the funding process, there is more to do.

A weakness in the way intervention logic has been used is that little attention has been paid to the underlying theories of change, in effect exploring the assumptions and risks that lie between the columns of the logic diagrams. In part this should improve with practice. But in part it also reflects RCN's historical research focus. Imagining and enabling the movement of new knowledge into implementation is likely to increase the societal impact of the work RCN funds.

The change from programme to portfolio management means there is little evidence of effects on reporting or monitoring. While many plans identified potential monitoring indicators, these appear not to have been used. Nor have there been evaluations done that could be based on intervention logic. The intervention logics produced operate at a rather high level, and tend not to take thematic aspects into account, so they offer limited guidance that can be used at the working level of designing calls for proposal.

The overall message at the programme and portfolio level appears to be that intervention logic has supported a cultural shift in RCN towards greater focus on impacts and provided the organisation with a tool that supports this common approach. The management and staff generally believe intervention logic has contributed to improving the way they work, but the shift to the portfolio level took place before the benefits of this change could become visible at the programme level.

The portfolios are not programmes. They each define a 'policy space' within which there is a need to identify problems and opportunities and then to propose appropriate interventions. Depending on the characteristics of the individual portfolio, this results either in a unitary portfolio or an overall portfolio with a suite of sub-portfolios. Portfolio management requires a new level of portfolio analysis at RCN that is still in the process of being refined. The first-generation portfolio plans we looked at obviously reflect the content of their predecessor programmes. In that sense they suffer from the same path-dependency as the programmes. They do not yet document one of the central characteristics of portfolios, namely not only making choices about where to invest but also where to dis-invest and why.

Coordinators are largely positive about the effects of intervention logic on their work: namely, that the refocusing on impacts is continued and strengthened at the portfolio level. The quality and clarity of the logic diagrams is significantly greater than that of most of the earlier programmes and reflects learning by the coordinators and the organisation, even if this level of understanding has not reached all of the portfolio boards. The portfolio plans, by definition, operate at a higher level than the former programme plans and are therefore more abstract. At least in the more complex portfolios, we believe it will be necessary to 'nest' investment plan level plans within the overall portfolio plans, in order to bring them into contact with the daily work.

5.2 The evaluation questions

In this section, we synthesise the results from the document analyses, interviews and survey to offer a composite response to the evaluation questions. Introducing intervention logic is still work in progress and forms one element in a shift of policy towards greater focus on implementation and impact in response to the societal challenges and therefore a change of processes and culture within RCN.

RCN's evaluation questions for this study were

- How has the introduction of intervention logic affected the way RCN plans, operates and further develops interventions?
- What effect has the introduction of intervention logic had on RCN's work to promote the societal effects of research?
- What are the characteristics of the programmes that have obtained the greatest benefits from intervention logic? For example, does the way intervention logic is implemented, developed and used appear particularly to affect the benefits of implementation logic?
- How can intervention logic be used in managing and generating strategies for the portfolios?
- Have there been unanticipated negative consequences of the introduction of intervention logic?

The main effect of introducing intervention logic on the way RCN works has been to strengthen the trend within RCN to focus planning on the societal impacts of funding, as opposed to the funding process itself. This is an important cultural shift necessary for RCN to move its focus towards impact, in line with government policy and the international prioritisation of societal challenges and the UN Sustainable Development Goals in research and innovation policy. It is also a difficult shift, involving an entire organisation – many of whose members have worked for a long time within RCN's historical traditions. While there is scope for further learning and the accumulation of experience in the use of theory-based planning, portfolio plans now explicitly address the systemic context and downstream effects of intervention. Having established this practice, we would expect its effects increasingly to affect the design and implementation of the internal policy cycle as RCN works through the implications of impact orientation.

For the moment, it is the inclusion of impacts in the planning process that is the most visible result. RCN staff attaches increased weight to theory-based planning and its understanding of the effects of the theory-based approach has improved. The interviews and coordinator survey point to the greatest use of intervention logic in developing plans, internal discussion of planning within the staff and on discussions with the programme board. Staff have used it less to influence the drafting of calls for proposals, selecting appropriate funding instruments and planning monitoring and evaluation. These perceptions are in line with our reading of programme and portfolio plans. In operational terms, the staff sees intervention logic has having a fairly modest effect on managing their programmes or portfolios, monitoring, communication, reporting and evaluation. The greatest operational effect is said to be on further development of the plans. This is in line with our expectation that, having established the practice of theory-based planning, its effects will spread across RCN's work with time and the accumulation of experience. The effects on monitoring and evaluation have been minimal. It is a requirement for plans to include output and outcome indicators. However, RCN maintains both a set of standard indicators and in certain cases also programme-specific indicators, as bases for reporting to the ministries that provide its budget. In practice, therefore, programme and portfolio coordinators' work to devise appropriate indicators went unused. A key factor is the disconnect between RCN's indicator systems and the requirement that plans

should produce their own indicators. Making the connection to evaluation needs evaluation mandates to require consideration of the plans, and there has not yet been much of a chance to make this connection. At the risk of sounding trite: the direct effects of theory-based planning are on the planning process; second-order effects on related activities are emerging but will take time to obtain as more systemic thinking percolates across RCN.

RCN's experience with theory-based planning is recent and has been complicated by the internal reorganisation that moved planning from the programme to the portfolio level. The organisation is in the process of completing a first cycle of portfolio planning, which both we and RCN regard as something of a pilot. The portfolio planning process is structured in a way that makes the link between funding activities and the goal to increase the relevance of RCN's work more visible, though this is complicated by the high level of abstraction in the portfolio plans. The staff understand theory-based planning as having had some degree of influence on linking RCN's work to the societal challenges but emphasise that this influence so far is primarily through cultural change. It has had the least effect on RCN's use of funding instruments. One reason for this may be RCN's work with simplifying the instruments, which has reduced the repertoire available to the planners and which in a few cases planners see as a hindrance to the realisation of their plans.

We found no systematic evidence about which plans have benefited the most from using intervention logic. The approach seems to jell most easily with programmes in international and regional development – areas where capacity-building within society is an objective. We are impressed by the example of the Hav portfolio, which has grappled with a complex set of activities inherited from three earlier programmes in addition to taking on new responsibilities. There, the staff and the portfolio board have developed a coherent, nested approach to the portfolio based on a stronger engagement with the theory-based planning process than seems to have been present in most other areas. The heritage of the programmes also brings with it more experience of theory-based planning than was perhaps available to others. While one example is hardly conclusive evidence, it is tempting to observe that if you practice a lot and try harder you are likely to do better. The example does at least reinforce our impression that getting the benefits of theory-based planning takes time and continued effort, with the implication that it is worthwhile for RCN to carry on with the work but also to devote yet more effort to learning.

We found no systematic evidence of negative unintended consequences. A few people have been irritated or frustrated by the change in approach. The change has been complicated by the reorganisation to portfolios and it is hard to imagine that the current pandemic has done anything positive to the ability of RCN staff to work and learn together closely in teams. Some of our interviewees warned against letting these complicating factors detract from the benefits and value of the theory-based approach. That seems to us to be good advice.

Success in using intervention logic in managing and generating plans for the portfolios appears to us to depend on making a continued effort at implementation. The portfolio plans need to become less abstract and more specific in order to engage with what happens 'on the ground'. This could involve longer, nested plans or using an intermediate level – such as the investment plans – to bridge the gap. We pointed out earlier the need to take better account of context, stakeholders, assumptions and risks in the planning process. Increased familiarity with theory-based planning and skills among the portfolio coordinators and the portfolio boards will over time improve practices. Training, peer learning and workshopping with the boards will all be needed to accelerate this learning.

5.3 Recommendations

Intervention logic involves a lengthy process of (re)education and learning. It has been introduced at the same time as a major reorganisation of RCN's structure and the way it works that makes it impossible to do a simple before/after comparison. The evidence is therefore softer than we would like; our conclusions are nonetheless firm.

It is hopefully clear from this study that intervention logic and the wider shift towards greater focus on impacts of which it is part is having a significant 'soft' effect on RCN culture as well as starting to change planning processes. The evolution of policy at a high level makes this shift necessary – it is not optional. **RCN therefore needs to carry on working with intervention logic.** While there are alternative ways to do theory-based planning, the underlying reliance on understanding the pathways from research to societal impact is the same. We see no argument for switching to an alternative variant; that would simply impose additional costs and implementation delays.

Initial education in intervention logic went reasonably well, but it seems that ideally more support would have been provided to coordinators in the early stages of using it. That is now water under the bridge. However, it does show that new people learning the technique need support over a longer period and that RCN should provide this. They need to develop the expertise and confidence not only to design intervention logics but also to moderate the process with internal boards. Given the length of the policy cycle, people will not need to develop intervention logics frequently. In order to build and share experience, peer learning seminars would be helpful. **RCN therefore needs to establish a semi-permanent infrastructure for training, experience exchange and 'help desk' support to planners and coordinators. Specific sessions for portfolio board members would be helpful to bring the current board membership up to speed, and an introduction to theory-based planning could usefully be included in the induction process for new board members.** We envisage this level of support being relevant for a handful of years, after which the amount of effort can be reduced.

At a more detailed level, RCN should make some process improvements in the use of intervention logic. We recognise that most of these are already mandated in planning templates, but in practice they are not being done to a useful degree.

- Where relevant in portfolios use nested logic in order to create contact between the high policy level and the working level
- Incorporate stakeholder analysis
- More explicitly consider the context in planning, including not only the activities of other funders but also an explicit needs analysis
- In particular, introduce a work step to consider assumptions and risks involved in the effect logic

Intervention logic should support monitoring and evaluation rather directly. At present they remain rather disconnected. **RCN should review its internal indicator systems and design an interface to the planning process that makes best use of the on-going effort to collect indicators. Evaluation mandates should in future require consideration of plans' effect logics.**

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Appendix A Questionnaire to RCN programme and portfolio coordinators

1. Hvilke(n) roller har du (hatt) i Forskningsrådet?
   Flere valg mulig
   - Programkoordinator
   - Porteføljekoordinator
   - Lederstilling
   - Annet, vennligst spesifiser:

2. Seminaret du deltok i:
   Ikke i det hele tatt / I lav grad / I en viss grad / I høy grad / I veldig høy grad / Vet ikke
   - Beskrev verktøy som jeg aldri før hadde brukt
   - Var relevant for meg og min jobb
   - Fikk meg til å innse at intervensjonslogikk kan være et godt verktøy
   - Var tilpasset mine behov mht. lengde, detaljeringsgrad, osv.
   - Var unødvendig – dette visste jeg fra før

3. I hvilken grad har du etter seminaret fått støtte til arbeidet med intervensjonslogikk:
   Ikke i det hele tatt / I lav grad / I en viss grad / I høy grad / I veldig høy grad / Vet ikke
   - Fra Forskningsrådets ledelse
   - Fra Forskningsrådets evalueringsgruppe
   - Fra andre kolleger i Forskningsrådet
   - Fra maler eller bruksanvisninger

4. I hvilken grad har du tatt intervensjonslogikk i bruk for:
   Ikke i det hele tatt / I lav grad / I en viss grad / I høy grad / I veldig høy grad / Ikke aktuelt
   - Drøftinger internt i programadministrasjonen
   - Drøftinger i programstyre
   - Å utvikle programplan(er) eller porteføljeplan(er)
   - Å formulere innhold til utlysninger
   - Å velge hensiktsmessige søknadstyper og aktiviteter
   - Å planlegge monitorering/oppfølgning eller evaluering

5. I hvilken grad har intervensjonslogikk vist seg være nyttig for å:
   Ikke i det hele tatt / I lav grad / I en viss grad / I høy grad / I veldig høy grad / Ikke aktuelt
   - Styre programmet ditt/porteføljen din

- Monitorere programmet ditt/porteføljen din
- Kommunisere om programmet ditt/porteføljen din
- Rapportere på programmet ditt/porteføljen din
- Evaluere programmet ditt/porteføljen din
- Videreutvikle programmet ditt/porteføljen din

6. Har du brukt intervensjonslogikk til noe annet?
   Fritekst

7. I hvilken grad synes du at bruk av intervensjonslogikk har ført til at Forskningsrådet:
   Ikke i det hele tatt / I lav grad / I en viss grad / I høy grad / I veldig høy grad / Vet ikke
   - Utvikler programmer og porteføljer på en mer systematisk måte
   - Bruker mer hensiktsmessige søknadstyper og aktiviteter
   - Bruker mer hensiktsmessige indikatorer for oppfølgning
   - Utvikler mer sammenhengende strategier og mål på ulike nivåer
   - Oppnår bedre sammenheng mellom investeringer og effekter i samfunnet

8. I hvilken grad synes du at:
   Ikke i det hele tatt / I lav grad / I en viss grad / I høy grad / I veldig høy grad / Vet ikke
   - Intervensjonslogikk er et verdifullt verktøy for Forskningsrådet
   - Fordelene ved å bruke intervensjonslogikk er større enn ulempene
   - Forskningsrådet har investert tilstrekkelig for at intervensjonslogikk skal bli et effektivt verktøy

9. Har du opplevd problemer, begrensninger eller uventede konsekvenser ved bruk av intervensjonslogikk?
   Fritekst

10. Har du anbefalinger til Forskningsrådet om videre bruk eller utvikling av intervensjonslogikk?
    Fritekst

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