

strategicRESEARCH



Strategic Research Programmes 2016 – 2019

Ex-post evaluation of scientific activities

2021 Helsinki

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Foreword

The Strategic Research Council (SRC) established within the Academy of Finland funds high-quality research with great societal relevance and impact. SRC-funded research seeks concrete solutions to grand challenges that require multidisciplinary approaches. An important element of the research is active and ongoing collaboration between knowledge producers and knowledge users.

1.1 Programme evaluation principles

The Strategic Research Council is responsible for monitoring the research programmes and reviewing their impact. Impact is reviewed at programme level. The aim of the programme review is to evaluate the current or prospective societal impact of the funded research and interaction, and to develop the strategic research funding instrument.

The SRC reviews project performance and interaction, and how these are realised as impact. Programme activities between different projects and the resulting impact is also under review. The special characteristics of each programme and project, as well as different societal roles of science, are all considered in the impact review.

Strategic research funding promotes multidisciplinary research and enables new combinations of expertise. A particular focus in the review will be on the results of multidisciplinary work and its ability to renew research. The review allows for the fact that multidisciplinary consortia funded in the strategic research programmes may not have the established publication channels single-discipline consortia do. For further information on strategic research, see the [funding principles](#).

The SRC organised the programme evaluation along the lines of the principles of responsible science. The material used in the evaluation, as well as the evaluation results, are published openly, if possible.

1.2 Ex-post evaluation of SRC programmes 2016–2019

The first set of completed SRC programmes was evaluated in 2020–2021. Under evaluation were four programmes:

- **Health, Welfare and Lifestyles, HEALTH (2016–2019)**
- **Skilled Employees – Successful Labour Market, WORK (2016–2019)**
- **Security in a Networked World, SECURITY (2016–2019)**
- **Urbanising Society, URBAN (2016–2019).**

There were a total of 13 multidisciplinary consortia in these programmes. The purpose of the evaluation was to form an overall picture of the quality and impact of the activities carried out in the programmes, and to facilitate the further development of the funding instrument.

The programme evaluation was divided in three stages:

- self-evaluation
- societal impact
- **scientific activities**

All four strategic research programmes that were evaluated had a three-year funding period. In the history of strategic research programmes since 2015, this has been the minimum for the duration of programme activities, and an exception. The usual strategic research programme duration has been six years.

The shortness of the funding period set abnormal challenges for projects to develop their multidisciplinary activities and produce scientific and societal impact outputs. While all four evaluation panels have taken this anomaly into consideration, it does mean that these research programmes have had exceptional difficulties realising the planned outcomes of their research processes before the final reporting took place. Therefore, programmes are vulnerable to criticism.

1.3 Evaluation of the programmes' scientific processes and results

This report constitutes the third stage of the first SRC programme evaluation, that is, the evaluation of scientific processes and results. The self-evaluation and the evaluation of societal impact were conducted before this third stage (see the review reports: [self-evaluation](#), [evaluation of societal impact](#)), and part of the material produced in earlier stages was available for use in this final stage.

The evaluation of each programme's scientific processes and results was conducted by a panel of invited international experts. The four evaluation panels worked independently without knowledge of each other's work. Each evaluation panel had the same guidelines for their work and the freedom to negotiate and interpret the guiding questions in the framework of the particular research programme and research traditions involved in the funded research projects. Therefore, the evaluation panels' reports have not been constructed to strictly similar models, but in certain amounts, differ from each other in their treatment of the evaluated issues.

While all four evaluation panels worked within same evaluation guidelines, the varying contexts and programs lead to certain differences in evaluation approaches. For example, all evaluation panels discussed issues regarding

responsible research, but each presentation shows the priorities evaluation panels gave for the said topics.

The evaluation of the programmes' scientific processes and results focused on the following three aspects:

1. Scientific quality of research outcomes and practices

- How would you assess the success of the research programme in creating new and important knowledge on issues related to the programme description? Can you mention a few examples of outstanding outputs or indicate features that made the overall result of the research programme stand out as high-quality research?
- How would you assess the quality of the research processes and practices applied within the research programme? Were the chosen methods of research reliable in general and capable of producing the research results in particular?
- Provide a view on these from the point of view of the principles of responsible research (incl. open access and transparency, equality and nondiscrimination, ethics, science education).

2. Characteristics, successes and challenges of multidisciplinary research

- How would you assess the multidisciplinary activities of the research projects? Multidisciplinarity may be present in both research processes and/or research outputs.
- Assess whether the research programme has created novel qualities (e.g. new insights, approaches, ways of understanding, domains of knowledge) by way of adopting a multidisciplinary approach instead of traditional disciplinary boundaries?
- How would you assess the multidisciplinary of the research programme from the point of view of the principles of responsible research (incl. open access and transparency, equality and nondiscrimination, ethics, science education)?

3. Relationship between research activities and potential societal impact

- How do the research processes enable or integrate the objective of generating or enabling societal impact? How would you assess the research programme's efforts to foster interchange between society and research by way of orienting towards problems and their solutions that are meaningful to Finnish society at large?
- How do the research outputs integrate the objective of generating or enabling societal impact?

- How would you assess the social impact aspect of the research programme from the point of view of the principles of responsible research (incl. open access and transparency, equality and nondiscrimination, ethics, science education)?

The panel meetings were held online via MS Teams on 22–26 March. Before the panel meeting, the panel members familiarised themselves with the evaluation materials (see attachments). In the panel meeting, panel members had a broad discussion of the programme’s scientific activities while covering all the evaluation focus points. After the panel meeting, the panel produced the review report with the support of the Division of Strategic Research.

The SRC wants to thank the panel members for the indispensable contribution to the programme evaluation.

Summaries

Summary of the evaluation report: Health, Welfare and Lifestyle, HEALTH

The present evaluation has assessed the scientific quality, interdisciplinarity and societal impact of the HEALTH programme. However, as noted above, our evaluation has been limited by the three-year duration of the programme (particularly concerning scientific quality and interdisciplinarity), and also by the timing of the evaluation (particularly concerning societal impact), taking place less than two years after programme completion. Despite these limitations, the panel is still able to conclude that 1) the programme has generated useful knowledge within the programme descriptions, 2) that all projects were multidisciplinary in design and research activities, in many cases even in outputs, representing a wide range of fields related to health and wellbeing, and 3) that there seems to be a good foundation for long-term societal impacts from the programme.

These findings have important implications. Optimising the value of learnings and outputs from government-funded (i.e. publicly funded) research should be a priority for SRC programme management. Links between the four HEALTH projects have been suggested in just one publication (Aikas et al: STOPDia – Workplace), but this paper submitted by StopDia is a workplace study done in 2010–2014, long before the HEALTH programme and irrelevant to diabetes. This may have been submitted in error, but illustrates the scope for cross-fertilisation between projects.

The ambitions of the four projects share many health and wellbeing goals, and share aims to interact with wider society by novel digital methods. There could have been added value from collaboration between the four HEALTH projects, for example to share tools for assessing health and wellbeing, but that was not incorporated into the programme call or the funding. There were also clear opportunities for sharing learnings and outputs with the other SRC programmes, namely URBAN, WORK and SECURITY. It is not clear whether this has been considered based on the evaluation data. However, this topic has been reviewed in other programme evaluation phases. Capacity-building conducted within the four projects, and outcome implementation within practice, will support continued impact from these HEALTH projects, with several examples of workshops and training events being established across the projects. However, it was unclear whether these represented new changes to ongoing curricula, or simply one-off events. There is potential to share these activities across SRC programmes. Research outputs of particular use to evidence users (policymakers, practitioners) that have been generated by the projects may have societal impact through being accessible and sustainable beyond the lifetime of the programmes. These include evidence-based practice guidelines (Promo@Work), practical

tools for research and practice (PROMEQ, Promo@Work, StopDia) and research methods and theory generation (APEX, StopDia).

The full benefits from successful short-term funded research often depends on informing a succession of projects to form a longer-term research programme, with staff continuity and supporting activities to provide sustainability. This is particularly true for research aimed at societal transformation to improve health. StopDia, in particular, has minimal publications by the end of 2019, but its activities and learnings follow into the T2D Data project, funded by the Academy of Finland, with real potential to impact the ‘information society’. The APEX team has also secured continued research funding to provide sustainability. In this context, it is worth noting that the research planned and conducted for Promo@Work was based largely on analyses of workplace health programmes that had already been collected under a previous research project. It is not clear under exactly what terms that work had been done, or why the analyses of those previously collected workplace programmes was not done under the previous funding.

Structural planning was very variable between the projects. The research activities were divided into work packages (WP) in all four projects, but only two had a WP dedicated to overall project coordination and management. PROMEQ had nine WPs, each with responsibility falling to a named investigator. Having a WP dedicated to overall management and coordination ensured co-creation with stakeholders and the public, and resulted in having published outputs from all WPs. StopDia also had multiple targeted WPs, and a coordinating WP that brought in a stakeholder advisory board. While its publication rate is much slower, the early papers include one with a non-academic first author, and an early process evaluation of user engagement with an online approach. APEX and Promo@Work did not have such a clearly defined structure or a WP for overall management, and this may have led to some discoordination between the research activities, and slippage of timelines to deliver the declared project aims. Another key element for research, which aims to have relevance to stakeholders and to wider society, is to include a strong theme of Patient/Public Involvement (PPI). While PPI was very visible and included specifically within the project structures in the applications for StopDia and PROMEQ, it appeared to be absent from the proposal for Promo@Work or APEX, and there was no evident involvement from PPI in their publications. These two structural needs could have been required at the funding stage, and reinforced at annual reviews

Summary of the evaluation report: Security in a Networked World, SECURITY

The strategic research programme Security in a Networked World (SECURITY) has succeeded in creating new and important knowledge on issues related to Finnish security while connecting to the discursive terrain of equity, sustainability and resilience in an interwoven society.

The programme has been successful in producing scientific publications. There is a very high number of publications and the output modes span the full continuum of outlets, including peer-reviewed journals, special issues of journals, monographs, edited volumes, policy briefs and newspaper articles. In terms of the quality of outcomes, the WINLAND project has made important contributions to the field of the water-energy-food security nexus. It is interesting and innovative to integrate the concepts of resilience, sustainability and security and to introduce into public debate the new concept of sustainable security. Significant and urgent issues on securing sustainability and sustainable security in the Finnish case are uncovered and brought into sharp relief. The GLASE project has used critical security theory and a human security approach to analyse the many dimensions of borders that separate and link societies, values and cultures, peoples and citizens and identities and bring new insights into multilayered borders of global security. Overall, the programme has provided new and in-depth knowledge on the nature of changing migration dynamics, securitisation processes, potential conflicts and resilient practices within the Finnish polity and society.

The programme has involved the full array of research methods combining qualitative and quantitative methods to produce novel insights and evidence at micro and macro levels. The micro-level studies on practices and everyday concerns give insights into macro developments and bridge the level-of-analysis divide.

The effect of the multidisciplinary nature of the programme is that the top publications have not been published in discipline-based journals, but rather in thematic or problem- and issue-focused journals. The multidisciplinary nature of the research activities in both projects have moved the security field beyond its traditional and conventional perspective. The publication outlets reflect this thematic shift to sustainable security and human security issues. The use of edited collections and special issues to address Finnish security and migration problems and solutions was only possible because of the variety of approaches encompassed in the team of researchers. The projects in this programme did well in producing open access output in the sense that both projects produced special issues of open access journals.

Research activities began with an ambitious promotion and organisation of multidisciplinary engagements and shareholder, community and civil participation, and were successful in carrying through with this to the sharing of findings. Additionally, the meaningful inclusion of non-academics in the research processes in novel and advanced participatory ways within the research processes and as an integral part of the research practices added a critically engaged quality to the research outputs. Yet it appears that these relations could not be fully sustained given the short duration of the programme, wherein the process of moving from research to outputs had to be accelerated. It is of note that there was no distinction made between multidisciplinary, interdisciplinarity and transdisciplinarity in the programme call, and as such a direction for research processes or outputs beyond multidisciplinary was not prescribed.

Different methods were used to generate enduring societal impact. One approach was to partner with stakeholders and co-create new knowledge of high relevance. Another approach was to challenge prevailing practices and legal foundations from a critical perspective.

Projects were transparent in reporting on research processes. Reflections on the research processes are incorporated in their publications and a clear precise description of the research process in each empirical study is published. An ethical approach is integral from research design to delivery. The work on this programme makes new inroads in terms of developing the principles of responsible research regarding equality, nondiscrimination and ethics of research. For example, GLASE embeds principles of equity in a novel way in their research processes, and WINLAND embeds transparency of planning processes and environmental ethics in their research processes.

Summary of the evaluation report: Urbanising Society, URBAN

The URBAN programme has made significant contributions to understanding urbanisation through a series of high-quality activities and outputs. Five outstanding aspects stand out:

- A. The URBAN programme has clearly developed a new knowledge base concerning urbanisation, demographics and complex challenges in Finland. The URBAN programme has also been successful in terms of generating broader theoretical understandings of key urbanisation processes and challenges based on detailed case studies, through high-quality publications in high-quality journals.
- B. The processes and practices used to generate reliable, convincing and novel research findings have been state of the art. URBAN has shown a new way of doing socially engaged research and articulates a new way of thinking about the role of science. This is a very important contribution in the Nordic context in terms of developing solutions with people. URBAN has deployed research approaches that are at the cutting edge of Finnish science and that can also contribute to state-of-the-art approaches globally.
- C. The URBAN programme has gone beyond disciplinary frameworks and included other perspectives. The composition of the project teams enabled multidisciplinary cooperation that facilitated the exchange of knowledge and methods as well as the discovery of new insights. In this sense, the programme has been successful.
- D. The commitment to pluralism and working with stakeholders has strengthened the interchange between researchers and society, especially potential users of the research. URBAN fostered interchange on a wide range of themes such as planning, migration and sustainable urban forms.
- E. In terms of the number of outputs, impact, contributions and collaborations, the programme represents excellent value for money.

In terms of elements that could be improved, three elements should be highlighted:

- Open access is the biggest weakness of the programme. Less than half of the outputs are open access, which runs contrary to the stated goals of the programme and the terms to which the research consortia agreed. The number of datasets that have been made available in some way is even more disappointing given the wealth of data that has clearly been created, the sophisticated options for anonymisation that now exist, and the sheer ease of hosting data and metadata online.
- Diversity is also slightly lacking across the programme, and especially in certain projects and within project leadership. Gender balance has been

reported on and is weak, with only 24% female investigators. It would be useful to have other diversity metrics for researchers.

- Finally, while the programme generated a large amount of multidisciplinary activity, including outputs and novel contributions, there were relatively few exciting disciplinary combinations. Given the challenges within the programme scope, a greater propensity of technical involvement may have been appropriate.

To conclude, the URBAN programme has delivered many of the goals that had been set for it. Many of the challenges identified in the programme were not well understood and in desperate need to research. The URBAN programme has kick-started multidisciplinary and impactful research that has created a solid base for understanding these challenges and a community of researchers that will contribute to addressing these challenges for years to come.

Summary of the evaluation report: Skilled Employees – Successful Labour Market, WORK

The topic of the WORK research programme was well chosen and requires both problem-driven applied research and fundamental research in order to guide decision-makers with evidence-based theoretical grounds. Given this understanding of WORK, the panel is of the opinion that the evaluation should consider indicators such as publications in highly ranked international journals and good citation records as measures of high-quality research, but also value other outlets and impacts for the broader evaluation of the success of the programme. In addition, multidisciplinary, diversity and open access are important indicators for the evaluation.

The review report of the panel is based on the summary report with scientific activities provided by the SRC, top 10 key publications of each project and bibliometric information from Google Scholar, SCImago Scientific Journal Rank (SJR) and Academic Journal Guide (AJG) 2018. The summary of the projects provides useful information on the success of the projects both in qualitative and quantitative terms but differs substantially in length and content, which makes evaluation difficult for the panel.

For WORK as a whole, there is a very substantial output in terms of 172 peer-reviewed scientific articles, chapters and books. A wide variety of publication outlets have been used that are aimed at different audiences. This ensures a wide reach for the WORK programme. However, it is doubtful whether articles published in 2016 are really the result of WORK, especially when no reference is made to SRC funding, which is the case in several publications. The output can further increase, because it is also highly likely that there are articles in the pipeline that will be published in 2020 or 2021. The top 10 key publications are quite diverse in nature, and there is unfortunately no motivation given to the selection of publications. The outputs have a strong international orientation via publishing in English with international publishers. The WORK programme has produced some high-quality outputs, sometimes in internationally high-ranking refereed journals. However, many of the outputs reviewed have, so far, not generated a significant number of citations. In fact, around three-quarters of the outputs reviewed have been cited less than ten times.

The programme covers a wide variety of research methods, and up-to-date data analysis has been used. But econometric methods predominate the top 10 outputs from the projects, and the scientific publications have largely taken place in journals where econometric and statistical analysis are common. Some papers, however, use case-study approaches and mixed methods. The dominance of econometric methods might be related to the fact that many of the outputs are based on analysing large administrative datasets. While this offers a robust basis on which to carry out analysis, the techniques used to analyse the data are based on standard statistical techniques. The ready access to such large administrative register datasets

may act as a barrier to innovation and stifle theory building. The use of geodata and webscraping techniques could provide valuable data for the research questions studied. The panel notes that several outputs are not motivated by, nor do they inspire, social science theories and concepts, but are rather descriptive in nature. The short timescale of the WORK programme and the keenness to generate outputs may explain the reliance on such datasets. Hence, the programme is methodologically narrow. When aiming at internationally visible competitive research, a three-year funding period needs to be reconsidered.

Multidisciplinarity is something that the SRC is especially dedicated to with the expectation that bringing together diverse perspectives from various disciplines leads to a better understanding of problems and to better solutions. WORK has published 170 papers of which 93 are listed as multidisciplinary (55%). The primary disciplinary basis for most of the publications is economics and in particular econometrics, while also econometric techniques are dominant. It is not clear from the documentation reviewed how successful project teams were in breaking down silos, hence fostering multi-team working. Cross-fertilisation between the different disciplines was rare. Disciplines were siloed within publications and projects and across the WORK programme. The lack of multidisciplinary was disappointing, and the panel could not find convincing explanations for this omission. The mission of WORK would have benefited from a broader disciplinary approach.

More than 100 of the articles are open access, which is a good result. However, if open access was explicitly required, 70 non-open access publications is still (too) high a number. All projects generate a lot of new data, but open access to the data is hardly possible; most of the time only metadata are freely available but access to the real data is restricted or not at all possible.

In terms of diversity, gender equality is an important issue. The panel concludes that the female representation in WORK is more than balanced at all levels in terms of both input and (first) authors.

1. Health Welfare and Lifestyles -programme

Research projects:

- Stop Diabetes – Knowledge-Based Solutions (StopDia)
- Evidence-Based Health Promotion @Work (Promo@Work)
- Inclusive Promotion of Health and Wellbeing (PROMEQ)
- Transferring Child and Adolescent Mental Health Treatment to Awareness, Prevention and Early Intervention (APEX)

Programme description

Research under this theme shall give special attention to mechanisms that, drawing on the results of scientific research over the past decades, can bring about permanent changes in people's behaviour. There is an abundance of information about health and wellbeing, but people in Finland are not following experts' lifestyle recommendations. There is also an abundance of knowledge about lifestyles that promote health and wellbeing, but that knowledge is not put to good enough use. A central concern under this theme is to identify different types of groups and their special interests and motivating factors. It is essential to consider the international context and cooperation: What successes have other countries had in the area of health and wellbeing, what lessons have been learned and what could be transferred or applied to Finland?

Research under this theme shall provide more information on how resources could be transferred from the treatment to the prevention of diseases. Research is needed so that information about health and wellbeing can be tailored in such a way that it better reaches and motivates different groups. The aim is to ensure that the information provided is taken on board and that it translates into health and wellbeing at all stages of the life cycle. In addition, the research can tackle questions related to the role and responsibilities of authorities. What impact do different instruments of influence and different solutions have, and what is their social acceptability? How can individuals be sustainably encouraged to take greater responsibility for their own health?

Panel members:

- Professor Michael Lean (chair)
- Professor Naja Hulvej Rod
- Dr Jemma Hawkins
- Professor Terje Andreas Eikemo

While focusing on the published outputs from the four projects, the panel also had access to two prior evaluations:

1. Completed Principal Investigator (PI) Self-Assessments of each project. These evaluations generally confirmed that the requirements set by the SRC call had largely been met. Results were more often described as ‘promising’ than ‘conclusive’, with few usable outputs at this stage. Publications were rather few, reaching a wide range of books and journals, but few in high-impact journals. There were few instances of process evaluation or published critique or analysis of the projects’ success, except for several mentions of unexpected difficulty in recruiting large numbers of participants using online methods.
2. External evaluation of societal impacts from Gaia Consultants. This is an insightful report, which concluded that the projects have made many efforts to engage with wider society. However, it also pointed at the challenges stemming from the short-term nature of the projects, with investigators being under pressure to publish before wider societal impacts (if any) could be assessed. In particular, generating recommendations for practice takes a much longer time, if ever, to reach actions that generate change. Finally, the uptake of digital activities was generally poorer than expected.

1.1 Scientific quality of research outcomes and practices

It is most important to reflect on the large amount of work that was undertaken over a short period of three years and to consider the potential of the work to generate changes, both in activities aimed at improving population health and in the ways in which research in this field might be conducted in the future. All four projects presented clear, graspable aims and innovation plans to engage across conventional divisions, which could ultimately contribute new evidence to help find solutions for major health burdens on society. The panel saw that all projects went some way towards achieving these aims. The present scientific panel evaluation inevitably seeks points of criticism, to identify scope for improvement in future SRC rounds.

All four proposals were well presented, honed to address all required points of the funding call. All were ambitious, as required in the call. However,

when the panel compared the planned publication amounts and qualities to the achievements during the projects' funding periods, the proposals had, perhaps obviously, been overambitious in terms of the number of outputs expected. The number of published original peer-reviewed outputs were far fewer than anticipated or had not emerged by the time the programme's funding period finished, and many of the presented outputs were non-peer-reviewed accounts or commentaries. This shortfall in numbers of publications may give a negative overall impression, but to a large extent this is inevitable because of the timing of the present evaluation. The publication types, including discursive book chapters and articles, did show efforts to disseminate outcomes to a wide range of potential readerships. However, evaluation of the outcomes of a research programme only two years after completion, with review material that largely concentrates on the programme funding period, limits the panel's capacity to fully evaluate the programme or its individual projects. The short duration of these highly ambitious SRC projects is a recurrent theme in our evaluation.

It is not possible to determine whether these projects will eventually publish all of the intended outputs, but rather few publications have emerged to date. Typically, publications of outputs from a three-year project might be expected to continue for three or four years after the end of data collection. This depends heavily on whether staff employment continues with funded follow-on work that entails analysis, writing up and submission of papers from a completed project. While this is essential for full, transparent publication of responsible research, it is seldom funded. There is a tendency to focus limited resources and time on publication of the 'lowest-hanging fruits', often biased towards analyses with positive results. Other important analyses, such as those with negative results, multidisciplinary interpretations and detailed process evaluations, all tend to be given lower priority and may never be published, despite their importance for informing practice and policy.

There is minimal scope for researchers to critique and improve their scientific methods within a three-year project: the design described in the proposal (often two years previously) has to be followed, and the clock is already ticking towards the end of funding. Staff are likely to start looking for new jobs half-way through the projects. Process evaluation, which is critical to the overall learnings from any research, cannot usually be completed until after research activities are complete. Additionally, the pressure to publish primary outcomes, together with the logic that a process evaluation can only make full sense in the light of the primary outcomes, means that this vital component is liable to become neglected. This undermines the first Hong Kong Principle. Process evaluation tends not to be published in high-impact journals, but it can nonetheless have huge impact. Notably, among the very few publications from StopDia, there is one good process evaluation paper on metrics of engagement, which will be vital for future translation. Also, there are examples of process evaluation papers from Promo@Work

(Laitinen et al 2020: Process evaluation of a mobile app for micro-entrepreneurs' recovery from work-related stress).

Publication in high-quality journals usually takes many months between submission and final acceptance. With limited remaining staff, this can have negative impacts on aspects of transparency and full reporting of all research outcomes. It also impinges on the openness of research by delaying the time when data can be made publicly available – usually after all planned analyses have been completed. Given these limitations, it can be noted that the four projects, all from experienced teams, approached their research aims using different strategies and from quite different starting points, which to some extent influenced the publication capacity and overall project success this early.

Here are some examples of different strategies in the programme. Promo@Work had already gathered together the data and the published resources needed for analysis before their HEALTH funding application, for analysis by the planned desktop research: this was a clear route to achieve numbers of publications in a short time. The APEX project imported, for example, a successful 'ready-made' intervention programme from Canada, so the need for development work was limited before implementation, potentially accelerating the publication timeframe. On the other hand, the StopDia project, while built on the 20-year-old Finnish Diabetes Prevention Study, was not funded to 'back a winner', but planned, among others, a hugely ambitious digital and group-work intervention that required a great deal of interdisciplinary development. This proved less successful, or slower, than hoped. That is in the nature of innovative research, and not a criticism of the project.

Notwithstanding the concern over timescales, the projects have all generated useful knowledge with regards the programme description, albeit to different extents. Examples include the Promo@Work evaluation of a nudge intervention within a workplace setting, which appears to be the first of its kind in Finland. The APEX project included the publication of 24-month follow-up outcomes from an RCT of the Strongest Families Smart Website intervention (originally developed in Canada), which began before the SRC funding; the authors state that this is the first study in the subject area to conduct long-term follow-up within an RCT design. This project also demonstrated successful post-evaluation implementation of the Strongest Families Smart Website intervention in routine practice across one-third of primary healthcare clinics in Finland; the authors state that this is the first implementation study of a web-based training programme for primary healthcare. The StopDia project has generated evidence for effectiveness from some elements of its composite intervention approach, not sufficient in themselves to stop diabetes, but encouraging enough to have attracted funding to be taken forward for further development under the T2D-Data project.

The HEALTH programme was aimed at supporting research and interventions tailored to vulnerable groups (e.g. migrants, children with conduct disorders, micro-entrepreneurs, people with pre-diabetes) and their special needs (which they themselves may not yet recognise). The panel saw that the programme was quite successful in doing this, through co-creation processes with key stakeholders. For example, the PROMEQ project was able to identify the needs of several (and sometimes interconnected) vulnerable groups, such as youth not in education, long-term unemployed, refugees in early stages of resettlement, and older people with multiple care needs and living alone at home, and develop targeted interventions for those groups. Another sign of the quality of the research output was that new tools were designed to limit selection effects (where the most resourceful people within vulnerable groups are selected or preferentially advantaged). For example, unique for both PROMEQ and Promo@Work was that social marketing was used as an approach to promote both individual and structural changes. This offers greater possibility to empower disadvantaged groups, often regarded as hard-to-reach for population study purposes, to encompass and understand the various needs of these groups and engage them as active key stakeholders.

Some aspects of scientific quality, relevant to this SRC programme were considered for evaluation:

- A stated goal of the programme was to be internationally competitive, to assess systematically which interventions had been successful in other countries, and transfer this knowledge to Finland. This was approached in different ways in different projects. In most cases, a comprehensive review of the published literature was conducted before proposals were submitted and incorporated into the subsequently published protocol papers. While some projects included new scoping reviews to systematically gather and document such knowledge (e.g. Verbeek 2020), others did not. StopDia included a large international advisory group in its submitted proposal. It is not clear based on the evaluation data whether these individuals had any further engagement with the project.
- Whether principles of good research practice have been employed. All aspects of the work, including management, research guidelines and user involvement have been conducted in a satisfactory way.
- The extent to which open science channels have been applied. The open science approach was only partly embraced in the programme. At the time of writing, 33.7% of the 'top 10' publications were not in open access journals. Open access to data was not routine: the codes and data were not openly available in all projects, and plans to make them available were not clear. PROMEQ was an example of good practices on this point, through the declaration that data was opened via the Finnish Social Science Data Archive in spring 2021. The reasons for not making at least metadata openly available were not described. Open sharing of online codes for digital solutions may enable societal uptake and upscaling, but

this was not done for all solutions, and one of them was even outdated by the end of the project. Shared codes for the digital applications were only made openly available for some of the projects, for example via github. Within the timescale of this evaluation, it is not yet clear if the Academy of Finland's funding terms on open science will be met. It would be useful to investigate whether there are other underpinning reasons for this, and to consider what measures might potentially be taken to support open science principles better in future research programmes.

1.2 Characteristics, successes and challenges of multidisciplinary research

It was a requirement of the programme call for projects to be multidisciplinary, and indeed the topics of the projects necessitated collaboration between experts from various disciplines. All four projects were thus multidisciplinary by design, representing a wide range of fields related to health and wellbeing including public health, psychology, social sciences and clinical medicine. Linked to the scientific approaches, some additional wider disciplines are also covered, including computer science, political science, economics and education. Thus, each project required a broad interdisciplinary team, which was also coherent enough to keep a strong focus on a different project topic. As a result, the panel would expect to see larger variation of multidisciplinary across the projects than within the projects, and that does appear to be the case in the HEALTH programme.

Multidisciplinary cannot easily be developed in a short-term project, beyond what is already present within the applicant team. The short duration of this programme hampers cross-fertilisation between disciplines and innovations, which demands novel multidisciplinary, if only because it takes time to get people together and to assimilate views and language from other disciplines.

Beyond what is already present within the project teams, there is a question around how much further new multidisciplinary can be developed given the short-term nature of the projects. The panel recognises that it takes time to bring people from different disciplines together and assimilate views, scientific languages and ways of working. The panel acknowledges that this may have hampered cross-fertilisation between disciplines and resulting innovations and knowledge production. These challenges to the multidisciplinary research process are reflected in an output, relevant to the whole HEALTH programme, from the Promo@Work project (Tiitinen et al, 2019. Developing theory- and evidence-based counseling for a health promotion intervention), which provides reflection on the challenges of collaborating across disciplines that represent different evidence and theory bases, and in particular notes the need for closer collaboration between teams.

In terms of research outputs, the evaluation data highlight that, for all projects, half of all the publications to date are multidisciplinary in nature, insofar as the publications include co-authorship from multiple disciplines and/or reference knowledge and concepts from different disciplines. The panel notes the challenges associated with publishing research that crosses traditional scientific disciplines – it often takes longer, and commonly is not viewed as having sufficient priority for the highest impact journals, or is harshly reviewed by single-discipline reviewers and editors. These may be factors behind the lack of publications in the more prestigious single-discipline outlets. However, interdisciplinary journals are gaining increased visibility (thanks to the increased focus on interdisciplinary research), so we do not regard this as a limitation. In fact, the publication of outputs from the HEALTH programme in interdisciplinary outlets may be one example of culture change facilitated by the programme. However, it is not clear from the research outputs if this multidisciplinaryity is new practice for the project team members, their institutions or these fields of research in Finland. The panel also notes that the same projects have published several times in the same journals (which is not ideal in terms of broadening visibility), but also that different projects have published in the same journals (which can be considered a positive sign, indicating coherence between the projects and therefore also in the programme).

Each project has examples of the creation of new insights, approaches, etc., but it is not always clear if this is a specific result of the multidisciplinary nature of the groups. There are clear examples within the provided documentation of normal interactions between disciplines in terms of knowledge production, through survey designs, and the use of digital technologies within health and wellbeing is a consistent example across several projects (albeit not necessarily novel in some of the fields).

Across and within projects, knowledge is triangulated from different disciplines of research and informed by different research methodologies. This multidisciplinary nature of the projects may have strengthened the quality of the research, interventions and outputs. From a transdisciplinary perspective, there is evidence of research project activities that engage the knowledge and expertise of non-academic partners and collaborators and that cross traditional disciplinary boundaries in this respect. This has further enhanced the diversity of knowledge engaged with, and perhaps generated, as a result of the programme. For example, within Promo@Work, guidelines for workplace health promotion were co-created between the research team and a wide variety of key stakeholders and actors. One of the outputs from StopDia involves a knowledge user as the first author of the publication, breaking from the usual format of a primary researcher taking this position.

1.3 Relays between project's research activities and its interaction with society

There are multiple ways of assessing the societal impacts of research. Common to all these approaches, however, is that sufficient time is needed to nurture and capture evidence for a lasting two-way interaction with society, which may be represented by actions and publications involving user groups, sector or constituency leaders and the unselected general public. All four projects incorporated, by design, some degree of interaction between researchers and wider society, mainly through surveys, which offer potential to introduce and share new ideas. However, generating published outcomes from this process generally takes much longer than could be observed and reported within a pre-planned three-year project. Evaluation data that largely concentrate on the programme's scientific process and outputs limit the panel's capacity to fully evaluate a project's degree of interaction between researchers and wider society. While there was evidence in the publications that processes of engagement were undertaken, a longer period is required to assess the full societal interactions and impacts to any reasonable degree.

Setting research outcomes aside, the panel notes that the expected long-term societal **impact** of the programme will depend heavily on the societal **quality** of the work. Societal quality in turn relates to various aspect of methodology within the **research process**, which as well as good science practice in general are necessary to enable significant societal impacts from the publications:

1. **Efforts of the projects to interact in a productive way with stakeholders, in terms of co-creation and user involvement to foster interchange between society and research.** Co-creation and user involvement was exhibited extensively in the programme, which marked the social quality of the interventions. It may have made the interventions more socially acceptable, which may have helped enhance uptake and engagement. The successful implementation of co-creation (and the scientific publications reflecting on this process) is an important output of the programme, which increased the societal impact. With regard to the fostering of interchange between society and research, there are clear examples of the involvement of evidence users within the projects. There is indication of co-creation of knowledge between researchers and evidence users and the public through the use of survey data. There are also examples of knowledge dissemination to wider audiences beyond academia, including the public and evidence users, through the variety of publication types.
2. **Balance between individual-level and societal approaches.** While there are examples of interventions across socioecological levels of influence on health and wellbeing, the four projects tended to focus on individual-level and to some extent personalised approaches

(somewhat reflecting the SRC research programme aims, so not necessarily a criticism). Thus, much of the evidence of the projects' effectiveness to date comes from evaluation of individual-level interventions. However, in their publications, projects have highlighted more upstream challenges to health and wellbeing, which the individualised interventions themselves will not address. In StopDia, the ambitious plans to mount a digital population-directed approach to prevention appear to have given way to a compromised solution, including group-work sessions. PROMEQ highlights key determinants of health and wellbeing among vulnerable groups that are not addressed through the interventions developed and tested in the programme, such as financial problems, social inclusion and participation, cohesion, public transport and integrated services.

3. **Contribution of the projects to important issues and debates in society.** The projects have all clearly addressed and contributed to important issues and debates in society. In this regard, the programme has been largely successful. The issues raised by the projects are key societal challenges and these have also been discussed with key stakeholders. Publications from some projects have included book chapters and magazine articles, which can introduce debates on wider societal implications of research, aimed at wider non-academic readerships.
4. **Whether the project has enabled expansion of the project and new collaborations and given spark to new research areas.** There is evidence from the publications that the projects have at least paved the way for new research initiatives and new collaborations, although the latter is hard to judge. As regards the sustainability of the projects themselves, it is noted that both APEX and StopDia have secured continued research funding.
5. **Whether the project has led to implementation capacity-building, for lasting societal impacts.** All four projects were designed with a view to producing transferable implementation programmes. To be sustainable, increased implementation capacity among knowledge users, in terms of both staff and transferable resources, is needed for wider roll-out. To some extent, developing digital resources with long futures might complement a lesser investment in trained staff: the consolidation of StopDia into T2D Data project might be viewed in this way.
6. **Whether the projects trained a new generation of public health researchers to ensure future evaluation of interventions and further development.** There are many examples of workshops and training events across the projects, mainly for project staff but possibly including wider research staff. The projects employed a large number of researchers, with good gender balances in all four

projects, but it is unclear based on the evaluation data whether younger researchers have been given priority. The projects varied in their academic research training outputs. All projects contributed to Master's training.

7. **Whether there is potential in terms of upscaling of interventions.**

As specified in the call, digital tools were used in all studies, a requirement which might potentially allow for upscaling of interventions. However, while some of the interventions were already being implemented, others lacked a clear plan for implementation and upscaling. The StopDia project set up a dedicated website early, and this has been adapted to embody its successor project.

Finally, the panel considered the potentially conflicting values for 'impact', placed on different types of multidisciplinary knowledge production, commonly observed between evidence producers and evidence users, particularly between academia and policy/practice. The research outputs generated by the projects that will be of most use to evidence users (policymakers, practitioners) may be those which have societal impact through being accessible and sustainable beyond the lifetime of the programmes, rather than those which obtain the most citations. These include evidence-based practice guidelines (Promo@Work), practical tools for research and practice (PROMEQ, Promo@Work, StopDia) and research methods and theory generation (APEX, StopDia). Furthermore, this differential in value may apply to whether, and for how long, digital apps developed/tested within the programme remain available and compatible with future technological advancements. It is of note, as mentioned above, that one such app developed in Promo@Work already is no longer viable because it is not compatible with newer Android operating systems. This is a potential limitation for all of the digital interventions created as apps rather than websites, and demands more active engagement with the IT community than had been anticipated in most of the four projects.

Based on these assessments of the **societal quality** of the HEALTH projects, the panel concludes that there seems to be a good foundation for long-term societal impact from the programme.

2. Security in a Networked World -programme

Research projects:

- Multilayered Borders of Global Security (GLASE)
- From Failand to Winland (WINLAND)

Programme description

In today's networked world, states are increasingly interconnected and interdependent not only in the realm of the economy, but also crisis management and security. It follows from this interdependence that in all states, including Finland, internal security and external security are inseparably interwoven.

Research under this theme will support efforts to monitor, analyse and predict changes taking place in the security environment and to recognise and respond to new types of security risks. The information gained from this research will strengthen the capacity of the state to perform its core functions, such as securing the existence and operational integrity of the state, enhancing citizens' security and sense of security, and understanding global security and geopolitical changes (incl. new types of threats related to information networks, information dissemination, cyber security, extremist groups and radicalisation, or pandemics).

The main areas of research focus are the overall security and operational integrity of Finnish society and its ability to tolerate and respond to risks. A major focus is on national security of supply in our energy- and knowledge-intensive, digitalising and globalising society. Other key areas of interest include the interaction between internal and external security, citizens' experiences of insecurity at different stages of the life cycle, changing values and attitudes, and the impact of these changes on the development of national identity, unanimity and democracy.

Panel Members:

- Professor Honor Fagan (chair)
- Professor Claudia Pahl-Wostl
- Professor Bengt Sundelius

2.1 Scientific quality of research outcomes and practices

The research processes funded in this programme produced new evidence and insights into Finnish security in a networked world. Examples of new and important understandings that have been uncovered and created in this research programme are:

1. the knowledge accumulated on the Finnish case to broaden and deepen the national concept of security
2. the depth of the knowledge connection made between security and the discursive terrain of equity and sustainability particularly around border and migration issues
3. the know-how and insights regarding Finnish planning for food, energy and water resilience and security in an interwoven society.

The academic publication outputs of the programme are insightful and are transparently based on data empirically generated in the field and subjected to critical and scholarly scrutiny. The numerous publications in peer-reviewed journals and in high-quality peer-reviewed presses are a clear indication that the research approaches chosen meet current scientific standards. Different research traditions have been utilised. Single authorship and book chapter publications have featured strongly in GLASE, and joint publications and peer-reviewed journal articles strongly in WINLAND. Overall, the programme has enabled a high number of publications and the output modes span the full continuum of outlets, including peer-reviewed journals, special issues of journals, monographs, edited volumes, policy briefs and newspaper articles ensuring that wider audiences are reached and impact magnified.

The WINLAND project has made important contributions to the water-energy-food security nexus. It is rare that in this fast-expanding field of study all three dimensions are addressed, that is, energy is included alongside water and food studies. Bringing these areas together within the national context of Finland provided a unique opportunity to produce innovative research of high societal relevance. WINLAND shows the connections across the distinct research fields of energy, food and water security and offers concrete proposals for integrating such studies. It exposes Finnish societal vulnerabilities affected by pressures and shocks to interconnected systems. It is interesting and innovative to integrate the concepts of resilience, sustainability and security and to introduce into public debate the concept

of sustainable security. Significant and urgent issues on securing sustainability and sustainable security in the Finnish case are uncovered and brought into sharp relief.

The GLASE project uses critical security theory and a human security approach to analyse the many dimensions of borders that separate and link societies, values and cultures, peoples and citizens and identities and brings new insights into multilayered borders of global security. We are provided with new and in-depth knowledge on the nature of changing migration dynamics, securitisation processes, potential conflicts and resilient practices within the Finnish polity and society. Both projects add significant depth to our knowledge on the interconnected interwoven, and networked dimensions of security in the Finnish context.

The research processes and practices applied within the research programme have brought to fruition an enhanced quality to the research outputs. Each work package principal investigator in both projects demonstrates a long-term research engagement with the issues under exploration. However, the multidisciplinary structure of the teams and the team working practices applied in the programme capitalises on these individual engagements, bringing a greater coherence to research questions, research findings, analyses, and the relevance of the recommendations. Additionally, the meaningful inclusion of non-academics in the research processes in novel and advanced participatory ways within the research processes and as an integral part of the research practices added a critically engaged quality to the research outputs.

GLASE for the most part focused empirically on micro-level settings, in a border context, and pulled out research results of much wider significance for societal and international security. Sharply focused empirical studies are linked to significant theoretical approaches, such as critical security studies, studies on resilience, on refugees and migration and on geopolitical approaches to Central European developments. WINLAND carved out specific questions for empirical research that deal with the linkages across food, water and energy, to deliver actionable research findings. They offered policy-relevant recommendations based on the research, for fairly concrete problems or policy challenges, framing their results in ways relevant to those that govern in the three sectors covered by the project. The multidisciplinary processes and team practices were critical to these successes as was the involvement of non-academics in novel forms.

The programme has involved the full array of research methods combining qualitative and quantitative methods to best effect to produce novel insights and evidence at micro and macro levels. An impressive range of methodological capabilities are reflected in the publications under review, and many of the publications reflect a mixed methods approach given the specialisms amassed through teamwork. For the most part, though not exclusively, GLASE employs an interpretative approach, generating data through intensive interviews in combination with a close analysis of other

secondary data to explore key issues and questions. Their methods and their roll-out practices are the reliable standard within social science, normally constituted in a combination of interviewing and thematic and content analysis of the pertinent secondary sources or events and speech acts which have provided novel insights. The team also engaged quantitative analysis of pertinent secondary datasets.

WINLAND also used interpretative approaches, argumentation and essay-style thesis building, but additionally developed advanced modelling techniques at a national scale involving simulations, estimations and assessments. Practitioners were engaged in scenario-based workshops and extensive surveys were carried out with a capacity for gender and class disaggregation of data. Most of the publications were based on rigorous quantitative analyses of large datasets to gain answers to focused questions. Overall, the security programme has created the opportunity and supported the advanced application of multiple complementary methods in scholarly research.

The work of this programme makes new inroads in terms of developing the principles of responsible research regarding equality, nondiscrimination and ethics in, and of, research. The subject matter and the objectives of GLASE have an integral responsible research component in that the publications for the most part directly address the production of inequalities, discrimination and insecurities, and sets out to mitigate the threats arising. WINLAND has a very strong environmental ethics integrated into their approach, which perhaps expands the concept of responsible research beyond the Hong Kong principles. Both projects publish in open access journals or buy open access. However, one has to be aware that scientific publishing is in a phase of transition around open access. There is an excellent focus on transdisciplinarity in sections of both projects, that is, the moving beyond academic actors in this research, given the involvement of both key decision-makers and those most negatively affected by Finnish security processes and practices.

There are strong traits of co-production with policymakers evident in the publications. Feedback to actors outside the academic community is carried out in a transparent manner, and a characteristic of some of the publications is the future planning with these actors. Indeed, their contribution is recorded in some of the publications. The strong mentoring of PhD students can be seen in their integration into the publications, particularly in the WINLAND project. Care seems to have been taken with the multi- and interdisciplinary aspects of their training (despite the additional time it takes) and their experience of the research process.

2.2 Characteristics, successes and challenges of multidisciplinary research

Both projects reflect the multidisciplinary nature of the SECURITY programme. This is evident in the outlets for the top publication outputs of the programme – they are not in discipline-based journals, but rather in thematic or problem- and issue-focused journals. A multidisciplinary approach could have limited the capacity of project leaders to publish in the gold-plated journals of their disciplines, but it seems to have better orientated the researchers towards publication outlets that may be more innovative and forward-looking on novel scholarship and/or public policy relevance. Given the multidisciplinary nature of the research activities, both projects have moved the security field beyond its traditional and conventional perspective. The publication outlets reflect this thematic shift to sustainable security and human security issues. In terms of research publishing, it seems that the multidisciplinary collaborations gave rise to additional opportunities to publish. The use of edited collections and special issues to address Finnish security and migration problems and solutions was only possible because of the variety of approaches encompassed in the team of researchers. The added value of multidisciplinary work on the Finnish case is evident in the outstanding publication success of the high number of publications over the three-year programme.

The research activities take seriously the ambition to work across disciplines. There is a challenging array of disciplines engaged in this programme, which in the case of WINLAND involved disciplines working across the natural and social sciences divide. The multidisciplinary activities in WINLAND were very successful in that (energy engineering – environmental science – political science – human geography – law) they managed to advance from multidisciplinary to interdisciplinarity and transdisciplinarity in some of their research activities and publications. A bridge between natural science approaches and social science approaches is built into their publications through their combination of methodologies derived from these very separate trajectories. Also incorporated in their publications are advances in transdisciplinarity given their inclusion of additional actors in forecasting and in generating solutions. The research activity of engaging the expertise from multiple disciplines and actors from outside the academic community in lateral thinking on the food-water-energy nexus generated the interdisciplinary and transdisciplinary advances evident in their publication of a special issue on sustainability.

There is less evidence in the GLASE publications that there was a move from a multidisciplinary to a transdisciplinary approach. Since this multidisciplinary team was constituted from social science disciplines that are situated very closely to each other in terms of their historical development, there is plenty of evidence of deep interdisciplinarity. However, if taken together with the fact that a majority of the publications reported for GLASE were from a single discipline, the fact that the top-

ranked publications from GLASE were single-authored indicates less multidisciplinary activity on publications.

It is of note that there was no distinction made between multidisciplinary, interdisciplinarity and transdisciplinarity in the programme call itself. This may have been confusing for researchers since multidisciplinary is achieved simply by the requirement that members of the teams come from diverse disciplines. It does not provide a direction for research processes or outputs beyond that. Additionally, the three-year timespan of the programme was far too short to support multidisciplinary work to progress to the depth of interdisciplinarity, given the additional toll in terms of the transaction costs that come with working across disciplinary boundaries and knowledge traditions. Early-career researchers, in particular, might have also had to take into consideration that prevailing practices judging scientific performance do not necessarily value multidisciplinary. Both projects give some critical reflections on their experiences in this regard. The above are points to be taken on board in programme planning as they may well have contributed to a situation in which research activities began with an ambitious promotion and organisation of multidisciplinary engagements, yet it appears that these could not be fully sustained given the shortened duration of the programme wherein the process of moving from research to outputs had to be accelerated.

Since excellent disciplinary research can and did provide very interesting insights and do constitute some of the top publications, it must be remembered that multidisciplinary should not be promoted as a norm for all contributions. However, approaches that crossed disciplinary boundaries and moved to an interdisciplinary understanding did justice to the complexity of the research domain of security in a networked world and the specific research topics addressed by the projects. One measure for the degree of disciplinary integration could be the number of authors (from different disciplines) on publications. The majority of the WINLAND publications fulfilled this criterion. Noteworthy is that an assessment of the quality of these publications indicates it conducted interdisciplinary research – for example publications on integrative frameworks.

WINLAND has produced new insights crossing the disciplinary boundaries between the water, food and energy communities. They made promising steps to develop innovative approaches at the interface between natural, engineering and social sciences and between quantitative and qualitative research traditions. The inclusion of so many disciplines and the crossing of natural sciences (engineering and technology sciences) with social science disciplines is not very unusual in tackling grand challenges (as seen in Horizon 2020 programmes, for instance), but it is carried out comprehensively in this project and with excellent effect. There are some innovative combinations, such as numerous publications, in which legal scholars publish with natural scientists. The holistic analytical frame for connecting water, food and energy is similar to the widely accepted notion

of One Health, connecting human, animal and vegetation survival. Like that accepted paradigm for research and practice on health, the approach manifested by WINLAND builds on such cross-fertilisation of science efforts.

The human security approach taken by a number of the GLASE scholars is one that has since the 1990s emerged within social sciences and specifically from international relations, international politics, political sociology, feminist security studies and international development. The research approach is derived from a number of multidisciplinary and interdisciplinary approaches taken to traditional security studies, and so their programme of work could never have been conceptualised within a single traditional discipline. In broadening the concept of security, GLASE has contributed to creating new domains of knowledge, new insights and new ways of understanding related to the production of securities and insecurities. The particularly novel qualities evident at the level of multidisciplinary are derived from the convincing integration of the social science subjects of law, sociology, political science and human geography in their research processes. In terms of novelty of insight, unknown configurations of border practices and securitisation processes in the Finnish context are uncovered that are of interest to security studies globally. The critical analyses of the visible and hidden aspects of borders and bordering would not have been possible within the confines of a single discipline. In terms of novelty of understanding, there appears to have been a critical confrontation between definitions of the situation among the team and partners. Conflicting definitions were in play and discussed as part of the research processes. A single definition of the situation was not possible or desirable, given the differing positions of various stakeholders and various disciplines. However, it is clear from the outputs that this conflict generated a more plural and novel understanding of 'national security' and 'borders'.

Multidisciplinary has led to new and interesting combinations of methodologies in the research processes also. There are new combinations of methodologies evident as many and multiple dimensions of the border security nexus were uncovered. For example, because of the spread of disciplines involved, hate speech was analysed competently through digitalised media analysis at the same time as stakeholder interviews were held and quantitative analysis was carried out on migration movement across Finnish borders. However, in overviewing their publications, novelty in methodologies arising from multidisciplinary or interdisciplinary combinations are not prominent.

It is not trivial or without significant cost to find journals that allow publishing from a wide range of perspectives, are open access and are high ranking. This programme did well in producing output in this respect. Both projects produced special issues of open access journals.

The GLASE multidisciplinary team approach ensured that the intersections of securitisation processes with class, gender, race, sectarian and north-south inequalities were critically examined in their research processes. The

numerous disciplines involved in this team are embedded in the knowledge of how inequities work, and so they produced a nuanced and competent analysis of the relations of power and the exercise of power in security. The principles of responsible research related to ethics, equality and nondiscrimination are engaged in the research processes, which is seen in the types of questions asked (e.g. ‘how were you affected by’) and in the methodology of ‘co-researching’ with affected communities. The scholars are clearly aware of power differentials relating to gender, class, race, religion, and geography, and this informs all of the field research reported on in the publications. This expertise is so well developed in some of their publications that it is possible that they can influence or orientate the culture of Finnish research on security and securitisation more strongly towards the principles of responsible research, specifically the principles of nondiscrimination and equality in research processes.

In the workshop activities and the publications referencing the workshops, WINLAND plays an effective gamechanger role in displaying how research into environmental security transformations should conduct itself. In this way, the multidisciplinary make-up of the team and their activation of transdisciplinary research processes adds transparency to the process. The empirical research and the action of finding solutions to real planning questions in open meeting formats are successfully married in this programme. The traditional role of scholars as objective critics of policy is upended through the scholar’s collaborative organisation of these workshops or think tanks. The outcomes from the transdisciplinary processes are incorporated into national-level strategies and planning and decision-making processes on food, water and energy security, since the involvement of policymakers in the creation of the research questions and solutions has been integral to the design of activities and publications. Both projects fully follow the principles of responsible research, and both enhance these principles. For example, GLASE embeds principles of equity in a novel way in their research processes, and WINLAND embeds transparency of planning processes and environmental ethics in the research processes.

2.3 Relationship between research activities and potential societal impact

Societal impact was integral to the SECURITY programme, and both projects were successful in using multiple methods to build impact into their research design. At the proposal stage, security problems were identified to have key relevance to Finland, and the research processes both generated and enabled societal impact by directly orientating towards solving some of these. The research processes were additionally designed to uncover unknown risks for Finnish society, in order to increase resilience and better prepare policymakers for unanticipated shocks that would be dysfunctional to the security of the nation. So, the research questions asked by both projects, and research actions rolled out, were from the beginning aligned to

societal impact. Considerable knowledge was produced about situations, developments and challenges in Finland of high relevance to Finnish policy shapers, practitioners and stakeholders in the comprehensive security area.

Stakeholder engagement and participation in the research process by people directly impacted by, or impacting on, relevant Finnish security questions was built into the projects at the research design stage. Both projects had strong ambitions to engage stakeholders/practitioners in their research activities and to reach out with their findings and insights. Enabling societal impact by the inclusion of 'shareholders' from official and significant bodies, such as the Border and Coast Guard Academy, in workshops, alongside involving citizens and activist groups in data generation, were useful techniques used to generate relevance and impact of findings. Interactions with practitioners constructively affected the research processes and the results. Examples include scenario workshops, a preparedness exercise and the understanding of foresight. An initial scenario workshop was arranged with practitioners to launch the project together with stakeholders. The problem area of foresight in planning became a key focus of the WINLAND project, and this was an interest also for relevant government officials. Of particular note is the 'preparedness exercise', which was conducted with the lead emergency agency of Finland. Because the results of the research exercises are co-created, they identify in real time by real players the actual response vulnerabilities in place. Additionally, the solutions and recommendations are both demonstrated to and co-owned by the relevant players. The findings (which ask for more attention be paid to the interdependencies between critical infrastructures and point to a need for changes towards joined-up thinking) are directly translatable, applicable and very directly designed for impact.

GLASE makes some critical points regarding its attempts to work with shareholders. The project reports show that interaction with relevant stakeholders (for example Border Guard, Ministry of Justice) can be challenging, particularly in terms of priority setting and establishing depth to the engagement under time constraints. Another approach was used to have social impact – prevailing practices and legal foundations were challenged from a critical perspective. GLASE set a very high standard for conducting research and analysing conflictual realities around security issues in Finnish society. The knowledge generated by them is timely and actionable.

WINLAND went a step further than engaging stakeholders in that it pursued the co-creation of knowledge with key stakeholders. The goal seems to have been achieved in that they changed their scenario process towards the end to take into consideration the needs and expectations of stakeholders. The WINLAND project developed a number of tools and analyses that are of direct relevance for dealing with security issues related to the water-energy-food nexus in Finland. But they also highlighted the lack of institutional settings where such recommendations could be taken into account and

implemented. Their inclusive stakeholder process was an attempt to overcome such institutional fragmentation.

The three-year timeframe does not provide sufficient time to build solid and ongoing sustainable relationships with key actors such as policymakers, although they may have been instigated and put in train by this programme. Where principal investigators had good access to audiences and partners before the start of the programme, this reaped strong dividends in terms of relevance and impact despite the three-year programme.

Projects were transparent in reporting on research processes. Reflections on the research processes are incorporated in their publications, and a clear and precise description of the research process is included in each empirical study. The dynamics of transparent research processes is evident where WINLAND incorporated change into their research plan. The GLASE project also highlighted problems when working at the interface of politically sensitive topics. They deal with the arising problems in a very responsible way.

An ethical approach is integral from research design to delivery. Evidence of this is found throughout the publications but of note in terms of responsible research is the unfolding of the argument made for ethical codes in border governance and cross-border governance arising from this research. Worth mentioning in terms of the principles of equity and nondiscrimination, is the examination and exposure of a gendered ethnic and sectarian 'othering' and the powerful generation of divisions and conflicts in securitisation processes that have arisen. In terms of equity and responsible research, their research processes include shareholders from diverse power positions, from the most disaffected communities to the ones holding structural and state responsibility for bordering, and a number of the empirical studies ensure due attention is paid to gender and socio-economic axes of discrimination.

3. Urbanising Society-programme

Research projects:

- Urbanization, Mobilities and Immigration (URMI)
- Beyond MALPE coordination: Integrative Envisioning (BEMINE)
- Dwellers in Agile Cities (DAC)

Programme description

Urbanisation has advanced at great pace in Finland. Even so, we continue to lag behind other Western European countries. Finland has the advantage of coming from behind. We can look at how urbanisation has advanced in other countries and put this information to good use in our own processes of urbanisation. Research under this theme needs to solve questions such as how cities can respond to residents' needs, what adds to the appeal and competitiveness of cities, how cities support innovations, and how functional labour markets are created in cities. It is also important to find ways in which the strengthening of cities can contribute to enhancing the vitality of surrounding regions.

Research under this theme will be aimed at increasing understanding of urbanisation and its impacts on the interaction between cities and regions and on the vitality of regions. The research approaches include, for example, digitalisation and resource efficiency. Information and solutions are needed about how to promote health and wellbeing, and about how urbanisation is affected by community planning, planning and land use policy, housing policy, taxation and industrial and commercial policy. Research can shed light on the impacts of urbanisation on how and where people will live in the future, on where the various functions of society should be located, on how mobility and transport should be arranged, on how social and health problems and opportunities will change, on how energy will be produced, on what kinds of resources will be available (e.g. quality of air, access to clean water, and food), and so on. Research is needed to explore the characteristics of centralised and decentralised community structures from different perspectives, specifically from the point of view of energy production and consumption, different industries, security of supply and self-sufficiency. Furthermore, research is needed into how the changing demography, the diversification of households and lifestyles, the growth of multi-place living, internationalisation and differences in people's values and practices influence the development of cities.

Panel members:

- Professor James Evans (chair)
- Professor Torill Nyseth
- Professor Anna Hersperger
- Research Director Hans Thor Andersen

3.1 Scientific quality of research outcomes and practices

Quality of research outputs. The quality of the research outputs is strong with an impressive 128 peer-reviewed publications by the end of the funding period. Largely, where findings are published in English they are in well regarded journals, and would be expected to be of interest beyond Finland. Many of the best publications are in high-ranked journals such as *Regional Studies*, *Environment and Planning*, *Planning Theory*, *Planning Practise and Research*, *Housing Theory and Society*, and the *Journal of Urban Design*. 71% of outputs were published in international venues, indicating significant reach and higher scientific quality, despite the fact that only 20% of outputs included a foreign author. While international authorship did not seem to affect quality, it may have improved the reach of the papers. Based on the evaluation data the programme has also produced four monographs, which suggests significant in-depth empirical contributions, although some of these are not accessible to non-Finnish evaluators.

Given that SRC funding focuses on Finnish challenges, some findings are inevitably of limited reach, being closely connected to some of the Finnish urban regions where the empirical data are gathered from. This limits the degree of transferable and generalised knowledge. The best outputs with the highest scientific quality are characterised by empirically rich case studies that are firmly anchored in theory. This makes it possible to identify general contributions to the field. For example, Leino and Puumala provide a much needed overview on co-creation in relation to urban planning that, while based on Finnish work, has broad relevance (especially the last part of the paper demonstrating the potential and limitations of co-creation). In terms of conceptual development, Granqvist et al. 2020 bring new insights into how persistent tensions between normative ideals of city-regional strategic planning and local government-driven statutory planning compromise innovative policy-level practice. Similarly, Mäntysalo et al.'s paper on discursive institutionalism represents a useful conceptual innovation in planning. Along with Berglund, these papers illuminate relations between future and strategic planning and make a significant contribution to the field. The conceptual contributions of the programme are particularly valuable in the context of planning and adjunct disciplines, which are sometimes rather theoretically limited in comparison to other social sciences.

Many of these conceptual contributions are rooted in detailed case studies. For example, Paiho et al.'s significant and highly rigorous piece of work on circular economy provides a very complete account. The programme also appears to have been strong in terms of enabling international research agendas. Ostbye et al., for example, acknowledge three funding programmes from different countries and offer data from multiple national settings. This strengthens the quality and relevance of the URBAN outputs. It would be expected that more papers bringing the Finnish URBAN case studies into dialogue with other international cases will emerge from the programme over time, and the individual project reports suggest a significant pipeline of forthcoming publications.

One issue of concern is that none of the projects addressed employment issues or labour markets, which are important as drivers of urban development, but the panel understands that these topics formed part of another programme. The panel also noticed that some of the highlighted publications were published in 2017, only one year into the programme, with fairly weak links to the project, suggesting they draw primarily on non-URBAN work.

New approaches and methods. One of the major strengths of the programme is the commitment to and extensive use of co-production to deliver socially relevant applied work through working closely with a diverse range of stakeholders. Many of the activities constitute action research, whereby researchers were involved in the processes they were studying, enabling them to 'get inside' social transformations. Co-producing housing plans with residents is a particularly strong example. Leino and Puumala present a valuable case study that identifies broader principles for co-production, but more outputs could have reflected on the benefits and challenges of co-production.

The programme also appears to have made significant methodological contributions relating to scenario-based and foresighting methods. The use of foresighting is scientifically and societally useful as well as to some degree innovative, and the URBAN programme clearly facilitated the further development of this tool in relation to urban planning (see Ravetz et al.). This emphasis further reflects a shift from traditional evidence-based research that is backward-looking to proactive research co-produced with stakeholders that is forward-looking. Testing such future scenarios with stakeholders is probably the closest social scientists can come to the kinds of experimental research usually associated with the natural sciences.

Other elements of methodological innovation include the use of social media and mobile methods, and the use of longitudinal demographic analyses in studying segregation. The application of longitudinal demographic analysis to study segregation is novel even if the method is not necessarily so. A more solid evaluation of the research process would need more evidence concerning the research processes specifically, for example including more information and reflection on the activities that took place.

Responsible research. Overall, the programme demonstrates a high awareness of responsible research, helped by the programme commitment to pluralism and co-production. From the available data, discrimination, ethics and science education are difficult to judge. There are concerns relating to gender and open access issues. As Figure 1 shows, in terms of gender, the male dominance has been striking, both in PIs and work package leaders. The gender balance of work package leaders is reasonable but not good, with 24% female work package leaders. While one project achieved a 50-50 split, another was entirely male. More than 80% of the publications were co-authored, suggesting that there was decent coherence within research teams, but it would be useful to have more information on authors from a diversity perspective to better understand diversity and early career involvement.

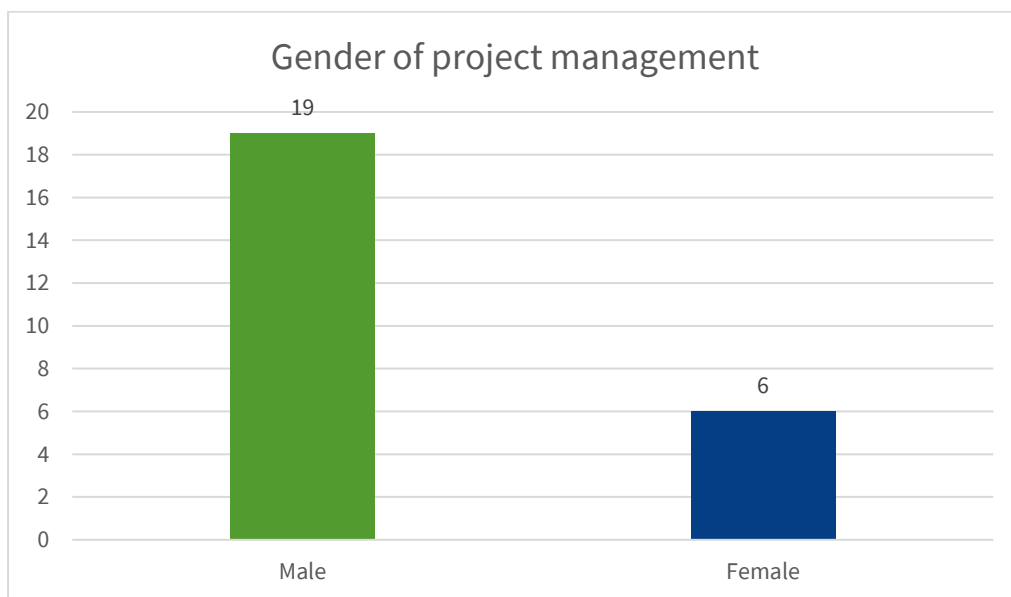


Figure 1: Gender of project management. Content of the table is described in the text above.

The second element of concern relates to the high number of non-open-access publications. With the ability of authors to offer grey open access for free by making pre-prints available in institutional repositories, open access should be the norm. The publication data from 2016–2019 show that less than 60% of the peer-reviewed publications were open access. OA can be harder to ensure for non-journal paper outputs, but these only make up 26% of the outputs. Open access to research data is even more sparse, incomplete and shows major shortcomings. In terms of the reported nine datasets, three are open, three are in the process of being made open and three are closed. This represents a weakness in relation to the OA aims of SRC funding. It is also worth noting that one project claims to have collected no research data, raising questions around the validity of the scientific process. Clearly, URBAN generated a wealth of useful data, but most of them have not been made available or even archived in a robust way. Projects indicate the successful production of many more interesting datasets (e.g.

surveys and statistical datasets used in modelling) that are not listed at all. Furthermore, metadata should always be open.

In terms of science education and ethics it may be necessary to look in more depth into the project-specific publications. This is important as closing the loop and feeding results back to stakeholders are an important part of RRI, but may also be problematic as many of the publications aimed at these audiences are understandably in Finnish.

3.2 Characteristics, successes and challenges of multidisciplinary research

Quality of multidisciplinary. The URBAN projects' research proposals promised multidisciplinary, and this seems to have been achieved in implementation. Despite the widely varying numbers of reported publications for each project, the number of disciplines involved is similar (14–16). More than half of the programme outputs are tagged as involving more than one discipline, so that these can be legitimately labelled as multidisciplinary. Where more than one discipline is involved, there are overwhelmingly either two or three mentioned. Only a few papers with more (four and six) disciplines were produced. The publications suggest that the programme is led by social sciences, as would be expected given the themes of the call. As Figure 2 shows, overall human geography, political and social sciences and to a lesser extent architecture are the dominant disciplines. Disciplines from the hard sciences are mentioned as contributing to only 18% of the outputs.

For an explicitly multidisciplinary programme, this is not an exceptional performance, but suggests that the majority of the research activities were multidisciplinary in some way. It should be noted that tagging publications using disciplinary labelling can hide some forms of multidisciplinary, especially in inherently multidisciplinary disciplines. Broad disciplines such as human geography (which can include economic, social, political, urban and cultural geography) and planning, both of which are prominent in the URBAN programme, are themselves multidisciplinary and can give rise to highly multidisciplinary activities and outputs that may not be recorded as such. These disciplines have simply internalised the need for multidisciplinary. Such disciplines also have major overlaps with neighbouring disciplines, which eases working in a multidisciplinary way. This led to many familiar combinations of social science disciplines (mostly involving geography, planning and urban studies) with few exciting combinations. It appears more difficult to establish between natural and technical sciences on the one hand and social and human sciences on the other hand. Environmental engineering is an exception here.

Given the focus of the URBAN programme, it was felt that there was a notable lack of involvement from the disciplines of psychology, health and communication science. (Naturally the choice of funded projects by SRC at

the beginning of the programme strongly steered the presence of disciplines and their collaborations in the programme's publications.) Overall there were differing levels of multidisciplinary achieved across the programme, but there is evidence that the more multidisciplinary projects were in their composition and research aims, the more effective they were at generating more adventurous forms of multidisciplinary (for example, Tammaru et al., see next section).

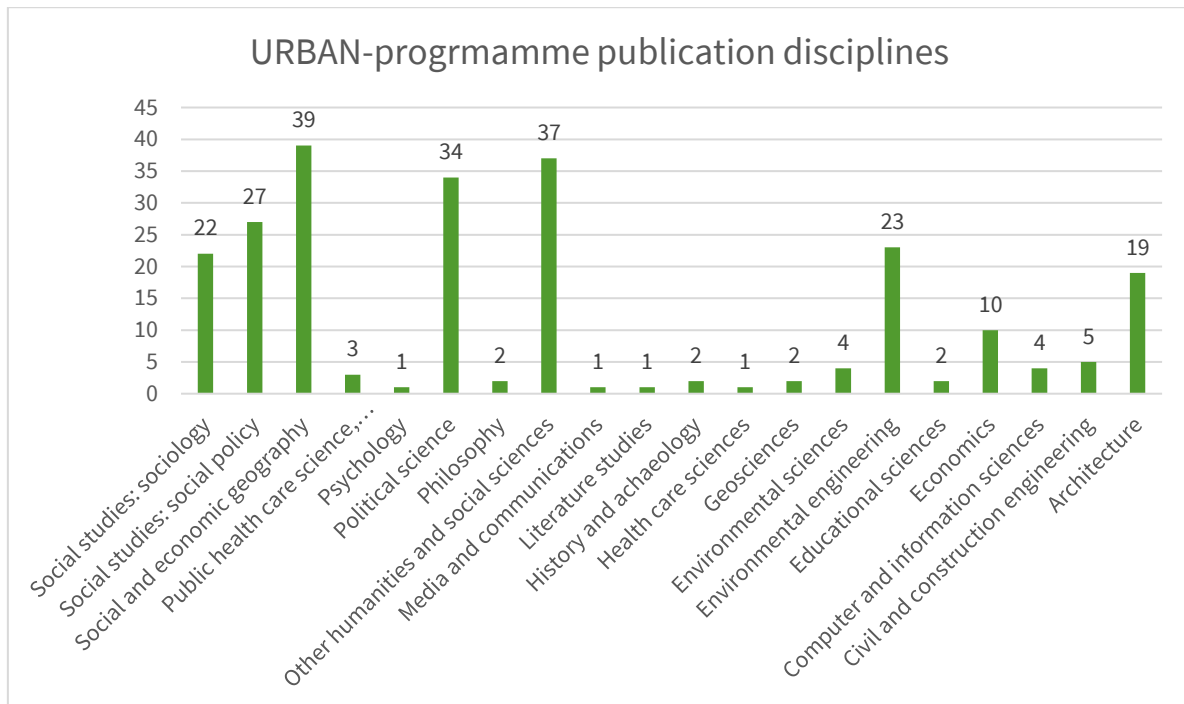


Figure 2. URBAN-programme publication disciplines.

New forms of understanding. The challenge-led approach and commitment to co-creation of research with non-academic groups helped promote the crossing of disciplinary boundaries. New phenomena such as cyber reality, the internet of things, sustainability conversion, mobility restrictions, urban living and others have only weak anchoring in existing disciplines and tend to stretch into neighbouring disciplines. They include broad questions and problems, which cannot be limited to single disciplines. Thus, in order to achieve a better and more comprehensive approach, multidisciplinary appears as 'the new normal'. Sometimes a discipline achieves this by absorbing key concepts, theory and methods from other disciplines. One example from the URBAN programme is the active involvement of local residents in housing projects combined with observations and interference by researchers. Here, architects benefited from research methods of anthropology and other social sciences to get a more direct sense of potential residents and their wishes. The main methods adopted in the programme are by their nature not confined to a single discipline. It is therefore hard to discern whether URBAN created a new multidisciplinary cohort of researchers who are now fluent with methods from multiple disciplines, or whether the research actually generated new multidisciplinary methods.

Looking into the outputs, it was not easy to find explicit instances where multidisciplinary had informed new ways of understanding. For example, Paiho et al., with upwards of ten authors, might be considered to be highly interdisciplinary, but all share the same organisational affiliation with no indication of their individual specialisms. Ravetz et al.'s framework on scenario planning for carbon reduction is clearly multidisciplinary in that different components were developed by different authors, and constitutes a novel contribution to the field that is presented in this paper for the first time. That said, the paper only involves planners and urban scientists and thus represents a minor form of multidisciplinary. In some outputs international collaborations also include multidisciplinary authorship (e.g. Davoudi et al.) This seems especially effective in terms of leveraging international research findings to add weight and relevance to the Finnish work, as well as creating new ways of understanding (in this instance relating to planning ideologies). It is worth noting that while authorship was often multidisciplinary, the publication destinations for some projects were limited to (albeit high-quality) planning and urban studies journals. Other projects reached more disciplinary audiences, publishing in journals across the social sciences and beyond. Tammaru et al. is worthy of note, involving built environment, geography and tourism studies. The paper brings a wealth of international data to bear upon the relationship between income inequality and social segregation, presenting clear findings about the relationship. This offers a clear example of where multidisciplinary has yielded new insights.

Sjöblom et al. is a more representative example of the challenges of identifying how multidisciplinary adds value. While not appearing hugely multidisciplinary (management and social sciences collaboration based at Tampere University), the findings are based on the series of expert-citizen workshops that were hosted as part of the URBAN-funded project. These workshops presumably involved a multidisciplinary approach, so it could be inferred that the resultant knowledge is a result of highly multidisciplinary activities. Similar inferences could be drawn about a number of the papers. Silm et al. for example involved a multidisciplinary approach, but the authors are all based in geography departments. The true value of multidisciplinary in the URBAN programme is thus partly concealed from view by the reliance on bibliographic data concerning disciplinary affiliation. It is a shame that none of the highlighted outputs explicitly seem to reflect on the multidisciplinary process in terms of what was learned, the challenges and what benefits accrued. Such contributions take longer to gestate though so may be coming in the future.

Responsible research. The overall success of the URBAN programme in relation to taking up new kinds of applied challenges that have traditionally been hard to address, plus showing better results and societal engagement, are clearly enabled by the multidisciplinary approach. The lack of OA data may also reflect the dominance of social scientists in the programme, as publishing data as fully as possible is more normalised in the natural and

environmental sciences (incl. the importance of allocating resources to such tasks).

3.3 Relationship between research activities and potential societal impact

Research processes and the generation of social impact. The URBAN programme has delivered a broad set of results that have been efficiently communicated to partners, stakeholders, relevant authorities and the wider public. The programme publications in academic journals have addressed and supported the generation of societal impact. All projects have used traditional and newer platforms for communication. Publications in Finnish should help in terms of societal impact. Moreover, full-scale projects demonstrating co-creation in practice is a further example of effective dissemination. Some of the science education work is in Finnish, making it hard to assess the success of the programme in engaging the general public, but the societal impact evaluation report suggests the programme struggled more in this regard.

Often it is not outputs that generate impact but research activities. Co-production generates a multitude of positive interactions with non-academic stakeholders. The co-production and foresighting methods in particular have clearly been very successful at enrolling a large range of groups in research, from senior level policy makers to youth groups. The objective of generating or enabling societal impact is most visible in the many workshops, action-oriented research, stakeholder interviews and co-creation and other activities. In this respect, the programme performed excellently. Participants clearly saw value in this approach and it helped steer the projects towards specific end-user needs. It is during the research process, through interviewing stakeholders and interacting with practitioners, that current practices are questioned and reflected on, stimulating transformation.

Socially impactful outputs. The societal impact evaluation report presents outputs that are directly used or have influenced regulation and methods for improving existing forms of citizen involvement and producing better models for planning and estimation of changes. Given the challenges of generating impact during project timescales, this represents a strong performance. A few papers deliver scenarios on effects of how different measures will provide green conversion of cities. Among the suggested means, car sharing is a promising method. Other innovative examples of socially impactful outputs include the creation of urban activities together with migrant youth, including pop-up restaurants, art exhibitions, etc., and the practical guides for peer-to-peer care-sharing practices. Such results have helped increase capabilities of different stakeholder groups to adopt agile practices and thus had an immediate impact in society. Especially impressive is the fact that follow-up research and practical projects have enabled some of the societal impacts to continue.

Many of the research outputs present clear findings and evidence that should be of use for generating societal impact. As the social impact evaluation notes, it is less clear whether these outputs are being effectively translated into outcomes and impact in all cases. That said, it would be necessary to revisit the evaluation in 2–5 years to fully assess the impact. All research projects struggle to continue either undertaking or evaluating impact work after the end of the funding period, and this is something that could fruitfully be considered for further support. In terms of value for money, more thought could be given to knowledge exchange and the emphasis on management of research and dissemination. This could encourage the explicit identification of pathways to impact to connect research to users.

Responsible research. The URBAN programme has embedded many of the principles of responsible research into its pluralist approach, enabling the programme to work ethically and responsibly with the key stakeholders and participant groups.

Producing publications in Finnish within the programme is considered positive as it helps broaden the potential audience and produce impact. Most principles of responsible research have been well followed in the projects, especially principles regarding transparent processes and ethics (e.g. in interacting with participants in interviews, workshops and action-oriented research). Societal impact can, however, be hampered by the weak dedication to open data. In order to create societal benefit in urban regions, open access to data is needed for the programme to have an impact beyond its duration.

The question of how research works with society to generate impactful work attracts a lot of academic attention. But out of the 30 most important papers nominated by the projects, only Leino et al. explicitly reflects on this process. This is a shame, as the URBAN programme will have created a wealth of experience among its researchers into how to conduct societally relevant and impactful research in the urban sphere that should be shared widely. The URBAN programme may have wanted to adopt terms like transdisciplinarity in its aims to reinforce the scientific elements of this way of working.

4. Skilled Employees – Successful Labour Market - programme

Research projects:

- Skills, Education and the Future of Work (SEFW)
- Smart Work in a Platform Economy (SWiPE)
- Occupational Restructuring Challenges Competencies (OR2C)
- Competent Workforce for the Future (COPE)

Programme description

Working life is in a state of global flux. Employment and career trajectories are inevitably being affected by robotisation, digitalisation, employees' changing knowledge and skill sets, etc. Traditional education and degree structures are no longer optimally suited to the changing conditions, but there is a need for new and more flexible ways of learning and adopting new ideas that cut across all stages of life. Research under this theme should respond to the challenges faced by educational institutions. Furthermore, it should provide concrete solutions for identifying and advancing the adoption of skills that will be needed in the future workplace so that skills and competencies match job requirements. The aim is to find ways in which the best existing research can be put to use in making the most of education, learning environments and skills as well as in anticipating the need for new skills and future occupations.

The permanent change in the labour market will also demand an examination of the need for institutional reform, for instance in labour market regulation and immigration policy. Furthermore, research under this theme helps shed light on the role of Finnish growth companies in the development of new skills and competencies and identifies the most critical success factors for these companies. Research under this theme should be able to present concrete ways in which the skills required in the future workplace can be identified and the assimilation of these skills can be promoted.

Panel members:

- Professor Jouke van Dijk (chair)
- Professor Jutta Allmendinger
- Professor Alan Felstead
- Professor Hans Lööf

Each of the panel members delivered an evaluation form with their personal judgment of the relevant review questions before the panel meeting. This was based on the summary report of the scientific activities provided by the SRC plus information provided by each project about their top 10 key publications.

4.1 Scientific quality of research outcomes and practices

The topic of the overall WORK research programme was well chosen. Issues such as the transformation of the labour market, necessary adaptations of the educational and vocational training systems and concomitant changes in life and work trajectories all ask for scientific advice based on theoretical insights, high-quality data and an excellent command of statistical methods and the literature worldwide. To enhance research impact, projects also need to have strong ties to work organisations and policymakers.

In the understanding of the panel, WORK is a programme of both problem-driven applied research and fundamental research. Researchers were asked to guide decision-makers based on evidence; to inform them about possible worldwide developments related to skills and employment; to adjust global events to the Finnish case; and to develop technical as well as political reforms to adapt the present situation in Finland to changing work requirements. Part of the WORK programme is descriptive in nature and intended to deliver incremental innovations. At the same time, WORK also asks for fundamental research that develops new theories and concepts.

Given this understanding of the programme, the panel is of the opinion that the evaluation should consider that indicators such as publications in highly ranked international journals and good citation records are valuable for the measurement of high-quality research. However, these indicators alone are insufficient as criteria for the broader evaluation of WORK in terms of societal impact. The mission of WORK itself requires other outlets as well. Based on existing knowledge and datasets across the disciplines, adopting, combining and analysing them by using state-of-the-art methods, enhancing the quality of data by developing new instruments, WORK was asked to build bridges across disciplines and across actors in the private and public sectors. All groups need to understand the grand challenges of the decades to come, the transformation of work and the new demands on the Finnish educational system being among them. Rather than being left alone in a state of

helplessness, decision-makers need to be enabled to act proactively. Peer-reviewed journal articles most certainly cannot deliver these goods but can provide a solid base in combination with other types of publications and forms of communications for discussions about suitable policies and the development and implementation of adequate policy measures.

The review report of the panel is based on the summary report with scientific activities provided by the SRC plus information provided by each project about their top 10 key publications. Positive self-assessments are given by the four project teams. These highlight where projects are strong and where they have encountered challenges and difficulties. Each of the panel members delivered an evaluation form with their personal judgment of the relevant review questions before the panel meeting in which the top 10 key publications were evaluated in detail, including bibliometric information from Google Scholar, SCImago Scientific Journal Rank (SJR) and Academic Journal Guide (AJG) 2018. Based on all this material, the panel met online for a day of intensive discussions on 26 March 2021.

The summary of the projects provides useful information on the success of the projects both in qualitative and quantitative terms. There is a substantial difference by project in the level of detail of the qualitative information, ranging from very short (1–3 pages) for SEFW and COPE to much longer (7–9 pages) for OR2C and SWIPE. The information on OR2C is the most to the point in terms of main findings and impact. This difference in setup makes it complicated to compare the projects and evaluate the programme as a whole. The top 10 key publications show substantial differences in type of output, but unfortunately projects had not been asked to justify their choice of top 10 publications.

For WORK as a whole, there is a very substantial output in terms of 172 peer-reviewed scientific articles, chapters and books (see figure below). However, it is doubtful whether articles published in 2016 are really the result of WORK, especially when closer inspection has revealed that in many cases the publication metadata has not always referred to SRC funding as demanded. Further outputs are also highly likely as there may be a pipeline of outputs that will be published in the years to come.

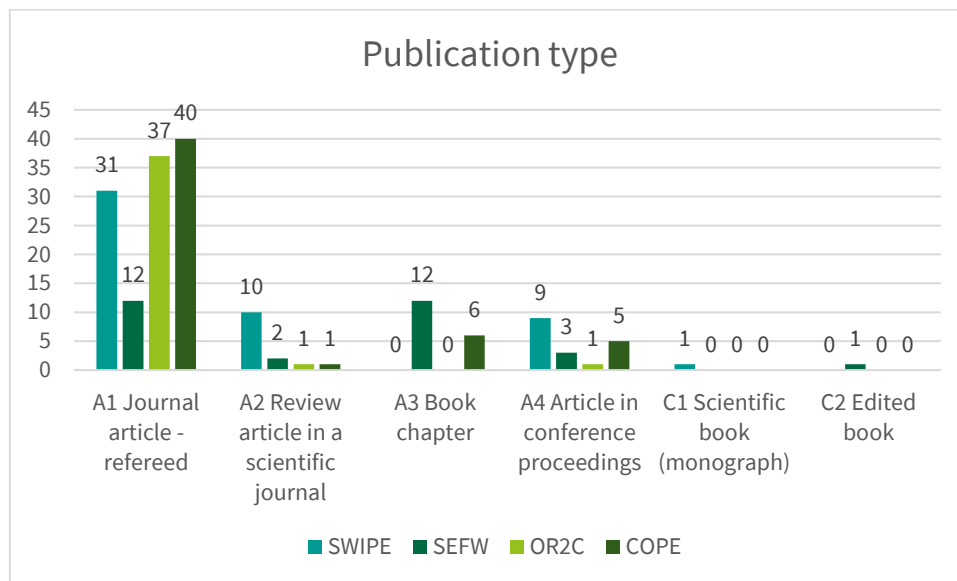


Figure 3. Most of the publications of the projects are refereed A1 journal articles: 12 by SEFW, 31 by SWIPE, 37 by OR2C and 40 by COPE. Overall the projects published one C1 and C2 publications. In categories A2-A4 there are more variation between projects and in each category there is 14-18 publications by the programme.

Total number of publications based on the evaluation data:

- SWIPE 51
- SEFW 30
- OR2C 39
- COPE 52
- TOTAL 172

The top 10 outputs have been published in a variety of outlets as follows:

- 23 refereed journal articles (one under review)
- 5 chapters in books
- 3 books (2 edited, 1 authored)
- 9 reports/short articles.

SRC-supported (and acknowledged) research has therefore resulted in publications in peer-reviewed international journals with wide appeal and high impact scores. These include:

- Administrative Sciences¹
- PLoS One²
- BMJ Open³
- Journal of Economic Geography⁴
- Journal of Public Economics⁵
- Journal of Youth Studies⁶

A wide variety of publication outlets have been used that are aimed at different audiences. This ensures a wide reach for the WORK programme. The output has a strong international orientation via publishing in English with international publishers, although the number of foreign co-authors indicating real international cooperation is small, except for the SWIPE project. That said, the panel puts greatest scientific weight on outputs in peer-reviewed journals given the refereeing process involved. The WORK programme has produced some high-quality outputs, sometimes in internationally high-ranking refereed journals. However, the panel notes that the turnaround times for some of the journal outputs is very quick. This may suggest that these papers have been subject to a lighter refereeing process. Despite the panel's preference for refereed journal articles, the value of an integrated set of papers in edited collections is also noted as an effective way of bringing researchers together and promoting dialogue.

¹ Niiranen, V., Zitting, J. & Laulainen, S. 2019. Challenges for Management in Implementing Reforms at the Ministry Level and in Health and Social Service Organizations in Finland. *Administrative Sciences* 9(3), 66.

² Wesółowska, K., Hietapakka, L., Elovainio, M., Aalto, A-M., Kaihlanen, A-M., & Heponiemi, T. 2018. The association between cross-cultural competence and well-being among registered native and foreign-born nurses in Finland. *PLoS ONE* 13(12); Leinonen, T., Solovieva, S., Husgafvel-Pursiainen, K., Laaksonen, M. & Viikari-Juntura, E. (2019). Do individual and work-related factors differentiate work participation trajectories before and after vocational rehabilitation? *PLoS One*. 2019

³ Leinonen, T., Viikari-Juntura, E., Husgafvel-Pursiainen, K. & Solovieva S. (2018). Cause-specific sickness absence trends by occupational class and industrial sector in the context of recent labour market changes: a Finnish panel data study. *BMJ Open*. 2018 Apr 7;8(4).

⁴ Jokela, M., Pekkarinen, T., Sarvimäki, M., Terviö, M. & Uusitalo, R. (2017): Secular Rise in Economically Valuable Personality Traits. *Proceedings of the National Academy of Science*.

⁵ Suhonen, T. & Karhunen, H. (2019). The intergenerational effects of parental higher education: Evidence from changes in university accessibility. *Journal of Public Economics*, Vol. 176, 195-217.

⁶ Niemi, A-M & Jahnukainen, M. (2020) Educating self-governing learners and employees: Studying, learning and pedagogical practices in the context of vocational education and its reform. *Journal of Youth Studies*, 23:9, 1143-1160.

However, many of the outputs reviewed have, so far, not generated a significant number of citations. In fact, around three-quarters of the outputs reviewed have been cited less than ten times. The panel discounts from its evaluation outputs produced before the WORK programme began and outputs that did not acknowledge Strategic Research Council funding. However, the panel also recognises that the research process is incremental and often builds on previous research projects and funding sources.

From each project the panel selected one example of outstanding output that illustrates that the research programme has generated high-quality research outputs:

- Wesołowska, K., Hietapakka, L., Elovainio, M., Aalto, A-M., Kaihlanen, A-M., & Heponiemi, T. 2018. The association between cross-cultural competence and well-being among registered native and foreign-born nurses in Finland. *PLoS ONE* 13(12)
- COPE10 – large random sample of native Finnish nurses drawn from a national register and access to the total population of foreign nurses; use of well-validated measures of cross-cultural competence; reduction of bias by imputation; and use of multiple linear regression and structural equation modelling.
- Solovieva S., Leinonen, T., Husgafvel-Pursiainen, K., Kauhanen, A., Vanhala, P., Asplund, R. & Viikari-Juntura, E. (2019). Controlling for Structural Changes in the Workforce Influenced Occupational Class Differences in Disability Retirement Trends. *Int. J. Environ. Res. Public Health* 2019, 16(9), 1523.
- OR2C05 – based on very large register-based samples (3 longitudinal cohorts of around 1.1 million) to which data from government agencies has been added; thorough and sophisticated analysis; and supplementary materials are available online (p13), thereby maximising the transparency of the article.
- Poutanen, S., Kovalainen, A., Rouvinen, P. (Eds.) (2020) *Digital Work and the Platform Economy: Understanding Tasks, Skills and Capabilities in the New Era*. New York: Routledge. (over 20 authors from the project).
- SWiPE01 – the book has international appeal since ‘the conceptualizations used and many of the identified and analysed features carry no national labels but are global in nature’ (p4); it demonstrates a variety of research methods, marking it out from other WORK projects which tend to be more one-dimensional; and all of the chapters can be read as stand-alone pieces of work and can therefore be readily used in teaching (each has its own set of references).
- Kerr, S., Maczulskij, T. ja Maliranta, M. (2019), "Within and between firm trends in job polarization: the roles of globalization and technology", *Journal of Economic Geography*.

- SEFW02 – it is based on matched employer-employee panel data covering the period 2000–2014; it has a strong conceptual framework (pp 1005–1008); it makes four contributions to the literature (p 1004); and it is thorough, extensive and very transparent, and runs to 38 pages.

The programme covers a wide variety of research methods, and up-to-date data analysis has been used. However, econometric methods predominate the top 10 outputs from the projects, and the scientific publications have largely taken place in journals where econometric and statistical analysis are common. Some papers, however, use case-study approaches and mixed methods. In addition, qualitative data have been collected and ethnographic methods applied. The dominance of the use econometric methods might be related to the fact that many of the outputs are based on analysing large administrative datasets. While this offers a robust basis on which to carry out analysis, the techniques used to analyse the data are based on standard statistical techniques. The ready access to such rich administrative register datasets may make it logical for researchers to write proposals with empirical approaches using this type of data, while in the absence of this data other innovative approaches of data collection or more theoretically based approaches could have been used. For instance, the use of geodata and webscraping techniques could provide valuable data for the questions in place. Also, combinations of the use of register data and other types of data could have been used so that both types of data mutually benefit each other. However, this potential has not been exploited to this extent within the WORK programme. The panel notes that several outputs are not motivated by, nor do they inspire, social science theories and concepts, but are rather descriptive in nature. The short timescale of the WORK programme and the keenness to generate outputs may explain the reliance on such datasets. Hence, the programme is methodologically narrow with only one of the four projects using a range of methods. When aiming at internationally visible competitive research, a three-year funding period needs to be reconsidered. Except for the SWiPE project, it is not clear from the documentation reviewed how successful the projects were in breaking down silos between project teams, hence fostering multi-team working. Work has been split up in teams and sub-teams, and this limits the ability to connect different results at the end of the funding period.

More than 100 of the articles are open access, which is a good result. But considering that open access was explicitly required, 70 non-open-access publications is still (too) high, although it is also understandable because most of the preferred top journals are only willing to publish open access if there is a substantial financial compensation. OR2C and to a lesser extent COPE perform much better regarding open access publishing than SWiPE and SEFW. All projects generate a lot of new data, but with limited open access to the data; most of the time only metadata are freely available and access to the real data is restricted or not at all possible. What we know of the documents, there is no sign of problems regarding responsible science. Many of the articles mention going through ethical approval.

4.2 Characteristics, successes and challenges of multidisciplinary research

Multidisciplinarity is something that the SRC is especially dedicated to with the expectation that bringing together diverse perspectives from various disciplines leads to a better understanding of problems and better solutions. It is also acknowledged that it might be more difficult to find publication channels for multidisciplinary research outputs. The panel understands this line of reasoning, but also notes that sometimes there may be a trade-off between multidisciplinarity and publishing in highly ranked journals. Both are objectives in the WORK programme, but not necessarily self-reinforcing. Although a multidisciplinary approach can be innovative in many research areas, including those addressed in WORK, it can also make it more difficult for researchers to publish in certain journals characterised by path-dependence and homogeneous methodological approaches. The panel took the liberty of interpreting multidisciplinarity to include diversity.

WORK has published 170 papers of which 93 are listed as multidisciplinary (55%). The primary disciplinary basis for most of the top 10 key publications is economics and in particular econometrics, although health sciences, educational sciences, economics, computer sciences, business and management, sociology and psychology are also present. The high number of publications in computer and information sciences might be due to the methodology and not related to the multidisciplinary dimension. Two out of four projects mention economics as the first and therefore most important discipline of their multidisciplinary research. Even the one project of the programme that does not cite economics as one of its disciplines (COPE) uses econometric techniques in all but one of its top 10 outputs. This project is strongly based in the work psychology tradition with only one output that is qualitative in nature.⁷ The SRC review material also highlights the relative disciplinary narrowness of the projects.

More than half of all the outputs (not just the top 10) from OR2C and SEFW are based in one discipline only. However, 70% of the outputs from SWiPE are classified as drawing on more than one discipline. SWiPE has also produced a ten-chapter volume that draws from over 20 researchers involved in the project. It contains contributions from a range of social science disciplines including ‘economics, business studies, organization studies, medicine, social psychology, occupational health, pedagogics, and sociology’. In the other projects, there was less evidence of cross-fertilisation between the individual projects with similar issues discussed but not always with cross-referencing to others in the same project team (e.g. COPE03). Cross-fertilisation between the different disciplines was rare. Instead, disciplines were siloed within publications and projects and across the WORK programme. Given the explicit multidisciplinary goal of WORK, the

⁷ Keskimäki I., Koivisto J. & Sinervo T. 2019. Integrating health and social services in Finland: regional and local initiatives to coordinate care. *Public Health Panorama*, 4 (4), 679-686.

lack of multidisciplinary was disappointing, and the panel could not find convincing explanations for this omission. The mission of WORK would have benefited from a broader disciplinary approach. However, multidisciplinary should not be a goal in itself but necessary for a better understanding of the problem and for better solutions. In many research areas, there are sub-disciplines that may be very different from each other. Sometimes the optimal cross-fertilisation can involve the application of rather narrow disciplines, while bringing together diverse perspectives can lead to deeper understanding and better solutions.

All in all, the conclusion is that although the applications mention 4–5 research fields and researchers from various disciplines participate in the projects, a large number of the publications are mono-disciplinary. It is not clear from the documentation reviewed how successful the projects were in breaking down silos between project teams, hence fostering multi-team working. The value added of a multidisciplinary approach is most clear in the SWIPE-project. Work has been split up in teams and sub-teams, which limits the ability to connect different results at the end of the funding period. The mission of WORK would have benefited from a broader disciplinary approach by means of a better understanding and analysis of the problems at hand. Also, in terms of data and methods, the variety is rather limited. Register data is the empirical platform for most papers within the WORK programme, followed by survey data. (Field) experiments, geodata and webscraping techniques – all suited for the WORK programme – were missing, and multi-modal and mixed-method designs were rare.

Gender equality is an important issue in terms of diversity. The data section and additional information provided on request by the SRC team gives good insights into gender diversity. Across the WORK programme, there is an equal (10 females and 10 males) gender distribution with regard to consortium directors and work package leaders. In person-years of input, women are overrepresented with 1.5 : 1. An interesting question is if the female overrepresentation is also visible in the publication outputs in terms of authors. The statistics show that the number of female authors is about twice as high as the number of male authors, and the number of first female authors is almost three times higher than that of male authors. Detailed by project, we see that on the input side the gender balance for SEFW is more male and for COPE more female, while OR2C and SWIPE are more or less in balance. In the output statistics, the differences in balance are also visible, but in all projects the female representation is higher than can be expected on the basis of inputs, and this is in line with the overall picture for WORK. COPE and to a lesser extent SWIPE and OR2C show substantial higher numbers of female authors, and only for SEFW is the number of male authors slightly higher. But overall, the panel concludes that female representation is more than balanced at all levels in terms of both input and (first) authors.

4.3 Relationship between research activities and potential societal impact

The aim of the SRC is to facilitate the interchange between research outputs and societal policies and practices. This is not only about the contribution that outcomes of research have to solving societal problems, but also about how participation of societal actors can facilitate and improve the production of knowledge. The assessment of societal impacts is approached in the IOOI (Input-Output-Outcome-Impact) impact chain framework.

How participation of societal actors can facilitate and improve the production of knowledge is usually actioned by involving stakeholders in the research process via co-creation. COPE and OR2C mention this explicitly in their application. In the qualitative evaluation, it is reported that COPE actively used co-creation where this is not reported for OR2C. From the description of the results of SWIPE, it is highly likely that they also used co-creation, although this is not explicitly mentioned.

The information on societal impact is retrieved from the SRC review material. All of the projects did disseminate scientific results in shorter papers and policy briefs and had interactions with policymakers and different stakeholders. However, it is difficult to identify a clear link between research impact and societal impact. While SEFW is outstanding in terms of research quality measured by bibliometric footprints, several projects report extensive communication and exchange captured as societal impacts. This includes development of practical tools to evaluate the competences of engineers (SEFW) and virtual training programmes in health and social care (COPE), and advice to labour associations and the Ministry of Economic Affairs and Employment on the legal rights of platform workers (SWIPE). The SRC review material lists a number of meetings, collaborations and interactions with different authorities and interest groups. In addition, other channels of communication have been established. These include a master class on the transformation of work designed to promote dialogue between researchers, labour market organisations, ministries and employers; targeting interested politicians in parliamentary groups; production of policy briefs for wide circulation; and organisation of EU events. Tangible tools have also been developed for widespread use in other settings. These include a career skills and coaching model (SEFW) and an online course to promote working in a multicultural environment (COPE).

Whether these forms of interaction have had any significant policy effect is difficult to evaluate on the basis of the provided information. However, despite this evidence, there is little in either the SRC review material or the top 10 outputs to suggest that the WORK programme has had a verifiable impact on policymaking or practitioner behaviour. This is not surprising for a three-year programme that has only just started to produce results. The main policy role is usually to deepen and broaden the knowledge base for various decision-makers. According to the SRC review material, the WORK

programme has produced a number of examples that can be qualified as substantial societal impacts. These include:

1. Contributions to public debate with OR2C and SEFW involved in discussions with policymakers and young people about the challenges faced by educational institutions as they seek to prepare the next generation for the new world of work.
2. The development of an action plan for Prime Minister Antti Rinne's Government's plan towards the development of an 'inclusive and competent Finland' (OR2C).
3. The development of practical tools to evaluate the competences of engineers (SEFW) and virtual training programmes in health and social care (COPE).
4. Advice to labour associations and the Ministry of Economic Affairs and Employment on the legal rights of platform workers (SWiPE).
5. Organisation of a four-part seminar series drawing on the results of projects across the WORK programme to highlight the issues and challenges of large-scale immigration. The outcomes of this series fed into policy discussions with the Ministry of Economic Affairs and Employment and the Finnish National Agency for Education.

As stated in the SRC review material: 'We require that Academy-funded projects recognise that the scientific publications in which the project's results are published are open access and that the research data produced are made widely available'. However, the data produced in the SRC review material suggests that while just over 100 publications are open access, 70 publications produced by the WORK programme are not. Furthermore, compliance with this Academy of Finland requirement varies by project. A majority of the outputs from SWiPE and SEFW are not freely accessible, whereas a majority of those produced by OR2C and COPE are.

Open access to data also varies by project. Restricted access to 14 of the datasets produced by SWiPE is possible. Two datasets produced by SEFW and OR2C are also available for others to use. However, no datasets from COPE are available on grounds that open access, even with restrictions, could reveal the identities of respondents. In principle, the data should be open for replication, but we understand that confidentiality agreements with data providers and restrictions from other informants often make this impossible.

The goal of gender equality is reached extremely well and can be qualified as a great success

5. Appendix

5.1 Appendix 1: Structure of the review material

Introduction

Each review panel received a material package in order to support the scientific evaluation of the particular strategic research programme.

The material package aimed to provide data for evaluating the strategic programme's scientific activities. The package constructed of three parts:

1. Data exported from programme's projects final reports.
2. Data on scientific peer-reviewed publications of the programme.
3. Evaluation reports of the self-evaluation and societal impact evaluation

The data presented in part one was produced by programme 's projects' leaders and programme director. This data was exported directly from projects' and programme manager's final reports.

The statistics in part two were produced by staff at the Division of Strategic Research (Academy of Finland). This part also included the top 10 lists of projects' key scientific publications.

The third part three consisted of material created in the earlier sections of the programme evaluation. Material was drawn from the programme's self-evaluation report and the programme's societal impact evaluation report. Selected specific topics for the use of scientific evaluation were:

1. Self-evaluation report: Pluralism
2. Evaluation of societal impact: a) Summary of the full report and b) summary of the programme's key remarks on societal impact

Besides this package, the reviewers had access to:

- Applications of the projects funded in the strategic research programme
- The publications that each project has listed as their top10 most important scientific publications

Data exported from final reports

Funding

Information on the funding decisions of the programme: amount of funding for each research project.

Key Terms of the Projects

Each project listed the key terms of their research project.

Research Fields

Each project listed max five disciplines that were part of the particular project. The disciplines were listed according to the Academy of Finland's Research Field Classification⁸.

Programme Director's Final Report: Public Description of the program activities and results

Programme director's overview on his/her own and research project's activities within the research program

Research Projects' Public Descriptions

Summary of Research Project's activities and achievements.

Research Projects' Research Implementation and results

Research projects' full report on the research implementation activities and achievements.

Data on Research Projects' Scientific Publications

Each research project listed their publications (2016-2019) in the final report of the project. The staff at the Division of the Strategic Research (Academy of Finland) collected the bibliographic metadata of these publications from national research publication database JUULI⁹ If the information given by the project and the database contradicted for example on the nature of the publication, the information of the publication database was used. In certain cases publications have not been found in the database. Related to the scientific publications during 2016–2019, the number of such publications was minor and referred to situations where

- the publication was written by a group of scholars that had no participant from Finland
- in the contrary to the information submitted in the project's final report, publication did not take place in 2016-2019
- the publication language or site was outside European and North-European area.

In the last case the information on the publication language was nevertheless added to the statistics referring to this particular information.

The statistics given to the reviewers consisted of:

⁸ <https://www.aka.fi/en/research-funding/apply-for-funding/how-to-apply-for-funding/az-index-of-application-guidelines2/research-field-classification/>

⁹ <https://www.juuli.fi/>

- Amount of peer-reviewed publications (2016-2019) of each research project
- Annual amounts of peer-reviewed publications (2016-2019) of each research project
- The type of peer-reviewed publications (2016-2019) of each research project, classified according to the Ministry of Education, Science and Culture classification of publications¹⁰
- Number of authors in peer-reviewed publications (2016-2019) of each project
- Languages of peer-reviewed publications (2016-2019) of each research project, classified according to the 2003 classification of Statistics Finland¹¹
- Location of publishing sites (domestic / foreign) for peer-reviewed publications (2016-2019) of each research project. The publisher of a publication has been determined when the publication is published in Finland and in Finnish. Conference publications have been determined according to the location of the publishing house.
- International co-operation according to scientific publications, presented for each project separately. The peer-reviewed publication has been determined international, if at least one author has been affiliated to a non-Finnish organisation (the author may also be affiliated to both a Finnish and foreign organisation). If all authors have been affiliated only to Finnish research organisations, the publication has been determined as domestic. The foreign editor of the publication channel has not met the criteria for international co-publications.
- Open access of scientific publications, given both on programme and project level. Open access qualification has been determined according to JUULI principles. Both OA publications and OA in repositories have been accepted as open access. The funding guidelines demand that all peer-reviewed articles produced with the funding should be open access.

Diversity and Multidisciplinarity of Scientific Publications

Using the above mentioned publication data, staff at the Division of Strategic Research (Academy of Finland) has prepared an analysis of the scientific publications' diversity and multidisciplinarity for the review panels. The bibliographic data has been collected from each publication's metadata on the disciplines that the said publication covers. The analysis has covered the following information:

- How many disciplines have been mentioned in each project's publication metadata

¹⁰ See classification types A1-A3 and C1-C2, <https://wiki.eduuni.fi/display/cscsuorat/Suorat+tiedonkeruut>

¹¹ <http://www.stat.fi/meta/luokitukset/kieli/001-2003/index.html>

- Which of the disciplines are mentioned most often
- In average, how many disciplines have been mentioned in publication metadata
- How many of each project's publications have included a mention on two or more disciplines, and how many have included a mention on only one discipline.
- Which disciplines have been most usually been mentioned together in the same publication metadata
- Which disciplines have been metadata in those publications that have been informed to cover three or more disciplines.

Openness of Research Data

The funding guidelines for strategic research programs demand that all research data collected and compiled should be opened if possible. Still, if legal or other reasons prohibit full open access to research data, the data may be closed when needed. However, metadata should be opened in all cases. The data has included lists of research data each project has reported and the information given about the openness of the research data and its metadata.

Gender Distribution

The data has introduced the gender distribution of consortium PIs and WP leaders on a programme and individual project levels as well as gender distribution of the duration of funded months of salaries on a programme level for all funded personnel in the programme's research projects.

Most Important Scientific Publications

Each project has given a list of its ten most important scientific publications in the final report of the project. The projects have been able to use their own criteria for choosing these publications. Besides the list of these publications, the review panels have also had access to the publications themselves. The projects had a possibility to renew this list in February 2021.

Self-Evaluation and Evaluation of Societal Impact of the Research Programme

The strategic research programme has included two phases prior the scientific evaluation. The key parts of these two evaluation reports have been offered to the review panel of the programmes' scientific processes and results.

Programme Self-Evaluation Review Report

The aim of the self-evaluation session was to provide programme actors with the opportunity to reflect on their own activities and cooperation within the programme and to share their experiences and views on the programme. The aim was not to assess the achievements of individual consortia or programme directors. The idea was to avoid simply repeating the contents of the final reports, whereby the discussion focused either on programme-level

observations or on the participants' perceptions of the function and framework of the funding instrument.

The scientific evaluation panel was offered a section of the self-evaluation report that concentrated on pluralism and multidisciplinary approaches and methods of the programme. Pluralism was used here to refer to the use of a diverse set of knowledge, practices and participants in co-creation. The added value of pluralism arose from the fact that using various approaches made it possible to take into account a range of research, political and philosophical perspectives in finding novel and potentially feasible solutions. As regards funding programmes of the Strategic Research Council (SRC), the concept of pluralism was especially connected to multidisciplinary. The aim of multidisciplinary was to generate cooperation where the whole is more than the sum of its parts. In strategic research, attention is paid not only to the benefits of multidisciplinary activities but also to the risks, costs and challenges posed by multidisciplinary cooperation for research and interaction activities and for the actors involved.

Programme Review on Societal impact

At the second stage, the aim of the evaluation of the programmes' societal impact was to understand and evaluate the social impact of SRC programmes. The assessment of social impact was approached in the IOOI (Input-Output-Outcome-Impact) impact chain framework. Attention has been paid to a wide range of impact chains, in particular to the interaction with stakeholder networks and changes in it. The review panel was offered the summary of the societal impact report as well as individual programme level parts of the report.

5.2 Appendix 2: Evaluation Form

The aim of the strategic research programme evaluation is to evaluate the current or prospective societal impact of the funded research and interaction, and to develop the strategic research funding instrument. The evaluation work has been divided in three processes: 1) self-evaluation, 2) societal impact evaluation, and 3) scientific evaluation. This form is used for scientific evaluation process.

Please provide your views on three general topics of the scientific evaluation. Full description of the evaluation aims are given in evaluation instructions. **Give written feedback, no numerical grade is required.**

The draft review is expected to cover all activities in the programme, namely to consider all projects that have been funded in the programme in an equal manner. Each programme's and project's individual aims and processes should be respected, as well as the diversity of research fields in context of research processes and outputs.

I Quality

Guiding questions:

Quality of research outputs (scientific publications, data etc)

- How would you assess the success of the research programme in creating new and important knowledge on issues related to the programme description? Can you mention few examples of outstanding outputs or indicate features that made the overall result of the research programme stand as high-quality research?

Quality of research processes

- How would you assess the quality of the research processes and practices applied within the research programme? Were the chosen methods of research reliable in general and capable of producing the research results in particular?
- Provide a view on these from the point of view of the principles of responsible research (including open access and transparency, equality and non-discrimination, ethics, science education).

II Multidisciplinarity

Guiding questions:

- How would you assess the multidisciplinary activities of the research projects? Multidisciplinarity may be present on both research processes and/or research outputs.

- Assess whether the research programme has created novel qualities – e.g. new insights, approaches, ways of understanding, domains of knowledge – by way of adopting the multidisciplinary approach instead of traditional disciplinary boundaries?
- How would you assess multidisciplinary of the research programme from the point of view of the principles of responsible research (including open access and transparency, equality and non-discrimination, ethics, science education)?

III Relations between research activities and potential societal impact

Guiding questions:

- How do the research processes enable or integrate the objective of generating or enabling societal impact? How would you assess the research programme's efforts to foster interchange between society and research by way of orienting towards problems and their solutions that are meaningful to Finnish society at large?
- How do the research outputs integrate the objective of generating or enabling societal impact?
- How would you assess the social-impact aspect of the research programme from the point of view of the principles of responsible research (including open access and transparency, equality and non-discrimination, ethics, science education)?

5.3 Appendix 3: Evaluation instructions

Dear evaluator,

We want to thank you for agreeing to act as evaluator – your contribution is indispensable to the Strategic Research Council (SRC) as funders of research. The request concerns the research activities and outcomes of the SRC programme XXX that ran between 2016-2019. The SRC relies on your judgement on what qualifies as good research. In the background of our request is the SRC's wider effort to develop, not only the individual programs, but the entire funding scheme that the SRC is conducting. With the view of that introspective and critical purpose, we wish to briefly indicate the rationale of the strategic research funding scheme. This way, we hope to obtain from your evaluation some enlightenment of the degree of the SRC's own success in fulfilling its purpose as funder of research.

The evaluation panel will consist of XXX members:

In this letter you will find information and guidance on:

what the SRC and its programmes are very briefly

- the guiding general principles of the evaluation
- the focus points of the scientific evaluation
- how the assessment proceeds in practice

The SRC and its programmes

Strategic Research Council (SRC) funds multidisciplinary research providing support for evidence-informed policy-making and working closely with stakeholders across the Finnish society. The proposals submitted to the SRC should aim at finding solutions to grand societal challenges. To receive funding, the research must be considered societally significant and of high scientific quality.

The SRC annually prepares a proposal on key strategic research themes to be approved by the Government of Finland. The Government then decides the final themes and priorities. After the Government's decision, the SRC can launch its programmes. The Strategic Research Council is responsible for monitoring the research programmes and reviewing their impact. Societal impact of this particular programme has already been reviewed on the level of programmes, whereas the purpose of this panel is to do the same with respect to their scientific quality.

Strategic research programmes funded by the SRC are solution-oriented and multidisciplinary. An important element is active collaboration between those who produce research knowledge and those who use it. The projects funded within an SRC programme form an integrated set of research

projects around a joint theme. Each programme includes 2–6 multidisciplinary research consortia, and they last for 3–6 years. Since 2015, SRC has opened 1–4 new programmes each year. SRC uses 55,6 million euros to fund these programmes annually.

Under evaluation now is the programme XXX was established in 2016 and completed in 2019. You may access the general public description of the programme and its research consortia through this.

Guiding general principles of evaluation

On the whole, the aim of the strategic research programme evaluation is to evaluate the current or prospective societal impact of the funded research and interaction, and to develop the strategic research funding instrument further. We seek to review project performance, interaction, and the ways they are realized as impact. Programme activities between different projects and the resulting impact have also been under review. Special characteristics of each programme and project, as well as different societal roles of science are all considered in the impact review. The review and evaluation of the scientific quality of research, which is to be done now, forms an important part of this broader evaluation effort.

The programme evaluation has been divided in three stages:

- self-evaluation
- societal impact
- scientific processes and results

This evaluation task concentrates on the third stage. The two previous stages have already been finalized. Key results of those stages are present in the material package you can use for familiarizing yourself with the programme activities and results.

The SRC organizes the review of its programmes along the lines of the principles of responsible science. The material and data used in the review as well as the review results are published openly, if possible. The methods should be transparent and quantitative analyses repeatable. Additionally, the appropriateness of the review system and the relevant indicators are inspected regularly.

The said principles of the research programme evaluation relate well to the recent [Hong Kong principles](#) for assessing researchers. The SRC hopes that you would pay attention to these principles in your evaluation work.

The Hong Kong principles consist of the following:

- Principle 1: Assess researchers on responsible practices from conception to delivery, including the development of the research idea, research design, methodology, execution, and effective dissemination

- Principle 2: Value the accurate and transparent reporting of all research, regardless of the results
- Principle 3: Value the practices of open science (open research)—such as open methods, materials, and data
- Principle 4: Value a broad range of research and scholarship, such as replication, innovation, translation, synthesis, and meta-research
- Principle 5: Value a range of other contributions to responsible research and scholarly activity, such as peer review for grants and publications, mentoring, outreach, and knowledge exchange transparent reporting; open science (open research); valuing a diversity of types of research; and recognizing all contributions to research and scholarly activity.

The focus points of the scientific evaluation

While the societal impact is at the heart of the SRC programmes, the evaluation of their scientific activities forms the backbone of understanding the value and nature of the strategic research programmes and their achievements. The aims of the funding instrument and the general guiding principles of evaluation given above suggest the following three focus points for the scientific evaluation process:

- The scientific quality of research outcomes and practices,
 - The characteristics, successes and challenges of multidisciplinary research,
 - The relays between the project's research activities and its interaction with society.
1. **The scientific quality of research outcomes and practices**, as well as their assessment criteria, is where we rely on the experience and expertise the evaluators. It is for the panel members to determine in each context, e.g., what qualifies as sufficient data, adequate methodology and well-argued conclusions. In this respect the SRC would be especially interested to obtain your assessment on the degree to which the research has succeeded in creating new and important knowledge on issues related to the programme description. In addition to the research processes and practices in a methodological sense, the SRC would be interested in your assessment of the research from the point of view of the principles of responsible research. These would include such things as open access and transparency, equality and non-discrimination, public engagement, ethics, and science education. We acknowledge that in certain cases these may be hard to assess based on the materials you have available, but the SRC would be grateful if you could keep these in mind where it is possible.
 2. **Multidisciplinary research** is something that the SRC is especially dedicated to. The SRC funding scheme is designed, in each case, to

bring together a set of diverse of perspectives. Therefore, we ask our evaluators to consider in their review especially the multidisciplinary work and its ability to renew research. In the dimension of outcomes, it would be valuable to know whether such cross-illumination of problems may have led to their better understanding and solutions. Perhaps interchange of viewpoints has even prepared the ground for the emergence of entirely novel domains of knowledge? In the dimension of research practices, our prospect is to see whether interdisciplinary orientation can, in the long run, contribute to the renewal of science at a deeper level of structures and culture of research. In other words, can it affect the general ways in which research is done. For example, can interconnections between different types of knowledge become part of the process through which problems are perceived in the first place? The SRC allows for the fact that multidisciplinary consortia funded in the strategic research programmes may not have established publication channels in the same way as single-discipline consortia have.

3. **The feedback relationship between research and societal impact** is the third special concern of our funding scheme. Here the aim of the SRC is to facilitate a genuine interchange between research practices and social practices. Participation of the practical actors in the production of knowledge is an important aspect of a learning process that may go both ways. Impact of research on social and political practices, which can come out as solutions to specific problems or as fuller awareness of what lies behind these problems, has been assessed separately, however. The focus point of the scientific evaluation should be to view this interchange from the point of view of research: how does it contribute to the ways and means of conducting research? On broader scale, the SRC is also interested in the more profound impact that research may have in the context of the modern information society.

How the assessment proceeds in practice

The assessment will proceed in three stages: preparations before the panel meeting; the panel meeting itself; and writing and finalizing the report after the meeting.

1. Before the panel we ask you to prepare for the meeting by way of familiarizing yourself with the materials we have uploaded for you in a virtual workspace. The workspace includes separate folders for materials to be reviewed, for the question form we ask you to use for making comments and notes, and for the instructions. The link to the workspace is here:

The workspace includes the following:

- Folder for preliminary comments

1. Evaluation form created for each panel member
 - Folder for material package
2. Evaluation data package
3. Projects´ applications (for the use of panel members if needed)
 - Folder for review instructions

We have created an evaluation draft form for each panelist. These can be found in the Preliminary comments file. This evaluation form has three sections, one for each of the focus points of evaluation. There are also some guiding questions that you may draw on while writing your comments and notes. Please feel free to make any observations and assessments you find essential.

The Review instructions folder includes this letter as well as other information needed for the evaluation task. We will include there also the information on the way in which the payment of your fee will be done.

We ask you to review the materials and share your comments and notes on them by way of uploading your evaluation form to the workspace. This should be done by Monday 15 March, so that other members of the panel will have the possibility to see what your preliminary views are. Before the meeting, please do have a look also on what other members have written in their comments and notes.

1. Panel meeting will take place virtually on XXX (MS Teams) between XXX Central European Time (CET). The panel will be chaired by XXX and the discussions will be based on the preliminary comments and notes of the panel members. We will provide the link to join the meeting in due time.
2. After the meeting the panel Chair will provide the first draft of the evaluation report. This should be uploaded in the workspace for check by the other members XXX. The other members will then have one week's time to do this check, that is, by XXX. The Chair will then make the final revisions, if any.

If you need any additional information or materials, please do not hesitate to contact us. This concerns especially the publications produced by the research projects: at this stage there are lists of top 10 publications by each research consortia included in materials. If you can indicate the ones you would wish to read but cannot access, we will obtain them and make available for you.

In all other respects too, it is our commitment to make your evaluation work as smooth as possible. For this purpose, we have a team of four officers available for you at the Academy of Finland.

- Kyösti Husso, Coordinator
- Jyrki Hakapää, Senior Science Adviser
- Samuli Hurri, Science Adviser
- Petri Jalanko, Trainee

Please do not hesitate to contact us if you have any questions. For now, we want to thank you once again and wish you enjoyable reviewing.

With best regards,

The SRC team of Officers, Academy of Finland