



Evaluation of the Energy funding programme

Management summary of the final report for the attention of the Swiss Innovation Agency (*Innosuisse*)

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Innosuisse implemented the Energy funding programme between 2013 and 2020. This was part of the “Swiss Coordinated Energy Research” action plan adopted by the Federal Council in 2012, with the intention to contribute to the Energy Strategy 2050. To achieve this, the Parliament approved a budget of just over CHF 250 million for the implementation of the action plan, of which CHF 184 million were earmarked for the Energy funding programme. This pursues two goals: Achieve a sustainable building up of capacity and structure in the energy research of Switzerland. By means of knowledge and technology transfer, the aim was to make the findings of research usable for business and politics. This was intended to contribute to increasing energy efficiency, promoting renewable energies, cooperation between research and industry, and phasing out nuclear energy. The funding programme consisted of three elements: Financial support for the establishment of eight thematic competence centres (SCCER Swiss Competence Centre for Energy Research), project funding (innovation projects) and joint activities to promote interdisciplinary exchange between the eight competence centres. The programme started in 2013 and ran until 2020, with total federal funding of CHF 256 million, of which CHF 184 million went to competence centres, CHF 65 million to innovation projects and CHF 7.7 million to joint activities. The implementation of the funding programme was transferred to the Commission for Technology and Innovation (CTI), now Innosuisse.

From 2020 to 2022, the Energy funding programme underwent an evaluation. We briefly look at the results of this evaluation below.

I Subject and objective of the evaluation of the Energy funding programme

The evaluation examined six areas in the Energy funding programme. These are the design and implementation of the funding programme and its outputs. The effects are divided into the structural effects (Outcome I) and the knowledge and technology transfer (KTT, Outcome II). In an additional module, theoretical considerations were made about social innovations, and their significance in the context of the funding programme was empirically examined. Finally, the long-term effects were assessed. The following diagram provides an overview of the six areas of evaluation.

Overview of the evaluation areas within the Energy funding programme



Source: Illustration Interface/Joanneum Research.

We summarise the key findings below.

I Evaluation of the design



The overall design of the Energy funding programme (coordination of goals, measures and means) is rated as good and coherent. The formation of eight large research competence centres was the right choice for building capacities, structures and collaborations overall. The adjustments made midway through the programme – especially the strengthening of knowledge and technology transfer – are reasonable and well justified. However, there are some weaknesses in the design. These include the low level of integration of the innovation projects into the funding programme, only a vague design of knowledge and technology transfer (KTT), especially at the beginning of the programme, as well as the competitive call for tender, in which there was limited competition (for the management of seven of the eight SCCER, intensive contact between the potential institutes existed even before the call for tender).

The findings at the level of the overall programme were continued at the level of the design of the individual research groups of the competence centres: Overall, the research collaborations had well-designed and appropriate research strategies with a clear focus in terms of content. One weakness was the comparatively low level of involvement of universities. This can be explained by the choice of themes, most of which are being worked on in the ETH Domain and universities of applied sciences, and by the failure in the area of competition when the SCCER call was announced. The KTT was also poorly conceptualised at SCCER level, with innovation projects barely, if at all, included in the SCCER concepts as a tool for shaping research and the KTT. In the second funding period, the conceptual weakness of the KTT was partially, though not completely, addressed.

I Evaluation of implementation



The funding programme had a very lean and simple governance structure with three bodies (steering committee, secretariat and evaluation panel). This structure has proven effective. Weak points were the rather modest resources of the secretariat and the decreasing involvement of the Swiss Federal Office of Energy (SFOE) over the course of the programme. The controlling was sensibly structured, but probably a bit too complex, and the data was only used to a limited extent for management purposes. The organisation at the level of each SCCER with one lead and three to six work packages was simple and sensibly designed. The joint activities increased collaboration between researchers from different SCCER and thus disciplines. Weak points were the rather limited room for manoeuvre of the heads of the SCCER with regard to the budgets and the actors in the network, the high level of effort spent on controlling and the late institutionalisation of the KTT.

I Evaluation of output



The extent of the outputs of the funding programme in terms of the acquisition of third-party funding, publications and provision of implementation services (spin-offs, patents, licences, information and training) was considerable in both quality and quantity and were good foundations for the impact at outcome level. The number of outputs in the area of inter and transdisciplinarity was comparatively small. The SCCER have also established themselves as points of contact for their research topics and in this way have built up extensive collaborations with both research and companies. However, the quality of cooperation in terms of intensity is likely to have varied considerably. The cooperation and implementation partners (companies) reached through online surveys indicated that the cooperations have led or will lead to specific market results. However, many of the cooperation and implementation partners could not be reached due to missing addresses or did not participate in the online survey. Thus, the scope and quality of collaborations could be overestimated.

I Evaluation of Outcome I: Capacity building and its sustainability



The SCCER successfully built research capacity (academic staff at all levels) during the running of the Energy funding programme. Some of this capacity will be retained – we assume between 40 and a maximum of 65 percent. Companies were also able to build capacity due to their participation in SCCER. However, this effect was (not unexpectedly) far smaller than in the research institutions involved in the SCCER. Thematically, the funding programme has led to existing research topics being strengthened and expanded. For a sustainable capacity and structural development, it is likely to be decisive whether and to what extent the newly created research groups succeed in attracting third-party funding, for example through the programmes of the Swiss Federal Office of Energy (e.g. SWEET¹) or Innosuisse. The funding programme resulted in a significant sustained increase in collaboration between the participating institutions, which will translate into new projects beyond the lifetime of the programme. Networking within technical and scientific disciplines has increased. The importance of social science research became apparent. However, close cooperation between natural and engineering sciences as well as social sciences (inter and transdisciplinary projects) only occurred in a few areas (e.g. mobility). The structural effects will be perpetuated if the research institutions see a scientific or financial advantage in it. Therefore, it will continue to be essential that the public sector,

¹ SWEET – “SWiss Energy research for the Energy Transition” – is a funding programme of the Swiss Federal Office of Energy. The goal of SWEET is to promote innovations that contribute significantly to the successful implementation of the Energy Strategy 2050 and the achievement of Switzerland’s climate targets.

as the funder of energy research, formulates requirements for addressing research questions in terms of capacity, collaboration among disciplines, and participation with cooperation and implementation partners. We consider this to be very significant for future research programmes in the energy sector.

I Evaluation of Outcome II: KTT



Numerous contacts have been made in the field from the SCCER. The overall level of KTT activity is high and increased sharply after 2017. However, the intensity of the collaborations varied markedly. A significant proportion of the collaborations were rather informal and took place at a low level. Joint projects between research and industry as well as traditional methods of communication (publications, informational tools and training and continuing education) proved to be key tools. The accompanying research demonstrated the positive impact of KTT in one-fifth of contacts. This value was by and large confirmed in the online surveys in the overall evaluation. In the second half of the funding programme, transfer increased significantly. From this point on, KTT concepts and KTT positions were created at the insistence of programme management. Earlier intensive engagement with the KTT and conceptual integration of the KTT into the research strategies of the SCCER would certainly have increased the impact. The SCCER were hardly noticed or not noticed at all by politics or the general public.

I Long-term impact

The Energy funding programme has had an impact in the area of structures, capacity building, enabled collaborations between research, business and other actors (e.g. public administration), and strengthened knowledge and technology transfer. The surveys shows that the aforementioned impact gradually fades after the programme ends, but still persists in the medium term (three to four years after programme completion). But how should the long-term impact be assessed eight to ten years after programme completion? It is not possible to make a definite statement on this. But based on our surveys, we consider the following scenario to be plausible: The impact, specifically in building capacity and structures, will continue to decline, but will not fully return over time to baseline levels prior to the start of the programme. This means that capacities, structures and collaborations created during the funding programme, as well as research topics worked on, will be maintained to a certain extent in the long term. One reason for this is likely to be programme funding, particularly from the SFOE, which will enable some researchers to continue working on their existing research topics in the energy field and to maintain collaborations established under the funding program. Furthermore, the participating universities will continue some of the collaborations with their own funds because they have proven to be profitable for their research and they can continue to make targeted use of the competencies that have been created. Finally, the topicality of energy and environmental issues in politics is likely to contribute significantly to the long-term preservation of some of the capacities, structures, and collaborations initiated by the Energy research programme.

I Evaluation of social innovations



Overall, the initiation and development of non-technical or social innovations and related activities was not a focus of the Energy funding programme. Non-technical topics and content were primarily housed under the umbrella of CREST, a circumstance that was consistent with the conceptualisation of SCCER but not always met with undivided approval. In view of the challenges of the energy transition, integrative, multi-dimensional approaches are becoming more important. However, virtually no inter and transdisciplinarity in the composition of the teams in the SCCER and/or projects was detected. Space for experimentation was rarely opened up. Some of the work of the SCCER provided concrete

starting points for the development of new approaches and solutions with regard to the design and transformation of the energy system. However, most of the attention was devoted to their own (technical) research work. There was a lack of concrete relations at the strategic level, including within the KTT, as well as flanking support measures to trigger social innovation.