The German national climate initiative – evaluation of its impact and success factors on the occasion of its 10-year anniversary

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Abstract

The German National Climate Initiative (NCI) presents one cornerstone of the German Government's ambitious plans to reduce GHG emissions. It was initiated in 2008 to contribute to the German climate targets and addresses businesses, consumers and local authorities in areas with significant efficiency and mitigation potentials that cannot be tapped by other instruments. The NCI aims to stimulate behavioural change and investment towards energy efficiency and lower GHG emissions by bringing together different actors, initiating local initiatives, reducing barriers and setting examples for multiplication and imitation.

The NCI supports diverse projects and programs including campaigns, broad and specific information programs, local energy/climate concepts as well as stimulus programs for efficient street lighting, commercial cooling systems or household-scale cogeneration facilities. Each program/project addresses at least one target group: consumers, municipalities, business and/or education. In the last decade, the NCI has funded more than 25,000 projects for around €800 million.

The NCI is the first German climate program, which has been subject to policy evaluation from the very outset. A systematic theory-based methodology was developed to address the challenges connected with the broad range of intervention types. Clustering interventions according to the program logic and mapping their causal chains proved very useful to discern the different levels of impact related to different types of intervention.

This paper describes the activities carried out under the NCI, presents the evaluation approach, and illustrates the findings of the evaluation (on investments, GHG reduction, employment effects etc.). We find substantial differences between information-based and investment-based activities, and between the various information-based project approaches. Moreover, the paper describes success factors and lessons learned that could also be helpful for the design and implementation of other policy programs.

Introduction

The German energy transition strategy consists of many different actions and programs aimed at mobilizing the necessary resources to reach ambitious mitigation targets. The strategy builds upon the German government's Integrated Energy and Climate Program (BMU 2007) as well as its Energy Concept (BMU and BMWi 2010) and is described in detail in various official documents (BMU and BMWi 2011). The National Climate Initiative (NCI) of the German Federal Environment Ministry (BMU) represents an important element of the programs and measures relating to the energy transition. It aims to contribute to the reduction of Germany's GHG emissions by 55 % by 2030 and by 80–95 % by 2050 compared to 1990 levels.

The NCI is geared to bring about more climate-friendly behaviour among businesses, consumers and municipalities in areas with important mitigation potentials that cannot be tapped using instruments like the EU Emissions Trading Scheme. The NCI is financed from revenues accruing from auctioning revenues of the EU emission trading system (EU ETS) and is supplemented by funding from the German Energy and Climate

Fund. It funds diverse projects and programs, ranging from activities raising energy-awareness and climate-friendly behaviour, the use of efficient technologies and renewable energy, to measures relating to all aspects of mobility.

The NCI projects and programs include campaigns, broad as well as specific information activities, pilot projects, integrated local energy and climate concepts as well as investment grants for efficient lighting especially for street lighting in cities, individual projects such as the CO_2 neutral modernization of an entire school, renewable energies, efficient cooling equipment or micro-cogeneration facilities in the residential building sector. The instruments used within the NCI can be broadly split into economic (= financial support) incentives and information-based incentives.

The need for consistent monitoring of activities under the energy transition has been recognized early on and regular monitoring reports are a fixed element of the assessment process (e.g. BMWi 2014). With respect to the NCI, an evaluation was initiated from the outset. The NCI evaluation has taken place in two phases so far. The first evaluation phase covered the years 2008–2011 and assessed the NCI based on a set of 12 mixed impact indicators, like GHG emissions mitigation, mitigation costs, employment effects, induced investment, outreach, innovation and replication (Öko-Institut et al. 2012; Schumacher et al. 2013; Schumacher et al. 2014). The second evaluation phase is still ongoing and covers the years 2012–2017; a first report covering the years 2012–2014 has already been published (Öko-Institut et al., 2017). In the second phase, the evaluation criteria were slightly revised, and indicators fine-tuned to better reflect outcomes and impacts.

This article describes the activities within the NCI during the evaluation period with a focus on the years 2008–2017, presents the evaluation approach, and illustrates some of the findings of the evaluation as well as lessons learned for following projects/programs aiming at contributing to reach the ambitious mitigation targets.

Methodology

GENERAL APPROACH

In order to comprehend the wealth of NCI projects and their objectives, but also to be specific enough to measure the contribution of the diverse individual projects, an integrative methodology was chosen that borrows elements of formative and summative evaluation theory as well as bottom-up data collection, monitoring, and calculation methods in order to properly cover the projects and their challenges.

The aim of the evaluation was to measure the impact of the NCI and of the projects supported within this framework according to a given set of criteria. In 2008, the Ministry of Environment had selected a set of four core criteria (innovation, GHG reduction, multiplier effect, economic effects), which served for the choice of projects to be recommended for funding. However, for the purpose of the overall evaluation, these criteria needed further refinement and operationalization by defining measurable indicators for each criterion.

The major methodological challenge was the wide variation of projects and initiatives of the NCI with regard to i) the addressed GHG saving potentials, ii) the target groups and iii) the type of intervention to induce a change in behaviour or in investment decisions. Projects and initiatives were therefore clustered according to intervention type and the underlying causal chain of effects. For each of the clusters we defined comparable indicators at the level of input, output, outcomes and impacts (see section cluster approach).

Figure 1 depicts the general evaluation framework. The evaluation was based on a bottom-up logic starting with activities at the level of projects and initiatives to gather findings on an aggregated level for the entire NCI. The general approach for the evaluation of the individual projects was based on assessing the aimed goals with the actual performance for all criteria. Based on a bottom-up logic, we calculated or estimated outcomes and impacts. In the case of the achieved emission reduction, the additionality of the GHG savings was measured against a defined reference development or a "business as usual scenario". The underlying assumption was that measures triggered within the NCI framework would not be implemented within the "business as usual" scenario.

Data and information were gathered from project documentation or program data collected by the entities commissioned by BMU to administrate the projects/programs, mid-term deliverables and final reports compiled by the projects as well as internal monitoring activities. Additionally, the evaluators used a variety of available empirical data or conducted a limited number of interviews and online surveys to gather the necessary information and data.

CLUSTER APPROACH AND BOTTOM-UP CALCULATION OF GHG MITIGATION FOR INFORMATION-BASED INTERVENTIONS

The NCI projects and programs were clustered into two broader groups: economic incentives (further referred to as investment-based interventions) and information-based interventions, mainly because they pose distinct challenges on filling the gaps for the bottom-up calculation of GHG-mitigation.

We developed a bottom-up model for calculating/estimating the GHG mitigation to depict at which point data is needed to fill the gaps (see Figure 2). The model is based on the recommended European Norm for "Energy efficiency and savings calculation – Top-down and Bottom-up methods" (CEN 2012).

This model is particularly useful for evaluators of information-based interventions affecting the patterns of usage or to stimulate investments in their specific target group of end energy users. Such types of interventions are regularly faced with the fact that the information communicated must be transformed into action or a specific set of saving measures within the target group. As a result, there is no clear indicator available to determine the efficiency factor of such information-based interventions (see gap "x" in Figure 2). This contrasts with investment-based interventions where investment in efficient technology is directly supported by grants or subsidies and the causal chain from intervention (financial support) to GHG mitigating measure (implementation of technology) is given by default, the efficiency factor is thus 1.

Further a portfolio of sub-categories of information-based interventions was introduced, based on empirical findings from environmental psychology and behavioural economics. The literature distinguishes between i) the kind of behaviour addressed (user routines vs. investment decisions) and ii) the degree of individualization of the information offered. These

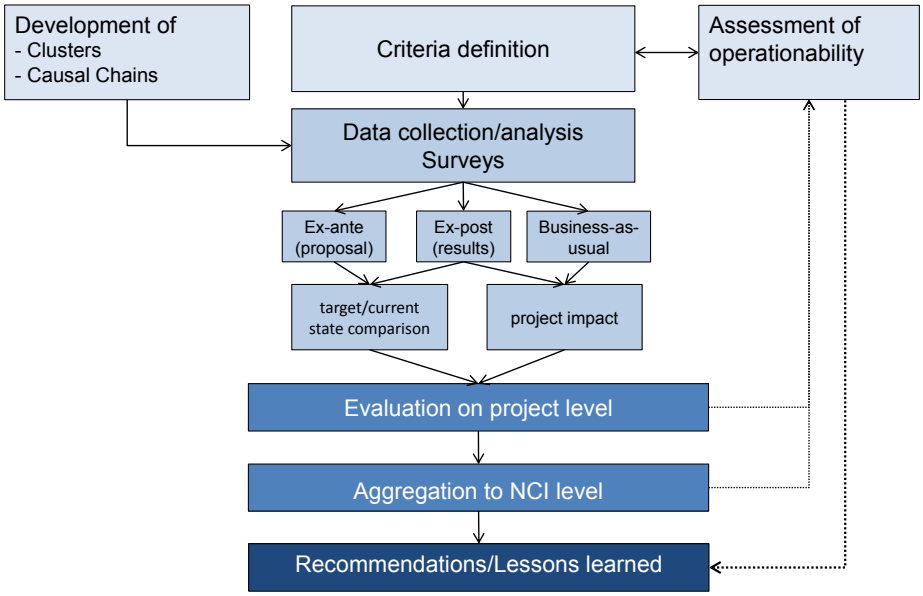

Figure 1. Methodological framework.

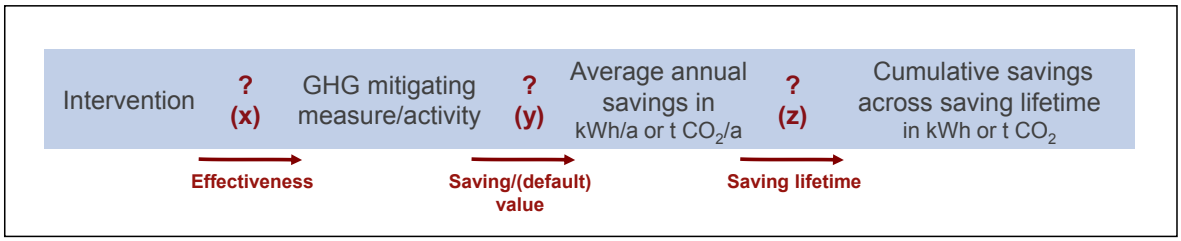

Figure 2. Our simplified model for gap identification in the bottom-up chain of saving calculations.

distinctions are relevant as they influence the effectiveness and efficiency of informational interventions (Tews, 2009). Regarding i), the addressed behaviour is relevant in terms of saving potentials (*effectiveness*). Saving potentials that can be tapped by investments in more efficient appliances and devices are much higher than saving potentials tapped by changing user routines (e.g. Bürger, 2009: 80). Furthermore, user routines are much more difficult to change than one-shot deliberate investment decisions. Regarding ii), the degree of individualization of an information-based intervention is relevant for the *efficiency*. Empirical results confirm that broad and mass information campaigns are less efficient in terms of their effect on behaviour or decisions than individualized information or on-site counselling (e.g. Abrahamse et al., 2005).

On the basis of these considerations, four clusters of information-based interventions were defined:

- *"Broad campaigns"* provide a fundamental orientation, simple recommendations and raise problem awareness. Campaigns reach a large number of people but are assumed to have a low efficiency rate. Accordingly, the efficiency factor of broad campaigns amounts to about 1–2 % – indicating that 1–2 % of those who are reached by the campaign actually take action and change behaviour or invest in more efficient technology – which has been qualified as a relatively high approximation (MultEE, 2016:6).
- "*Knowledge transfer to change investment decisions*" offers practical, situation or product-specific but not individualized information to those who seek to steer their investment by knowledge on savings, e.g. a website comparing the energy efficiency of products.
- "*Specific advice services*" provide individualized and situation-specific advice. It is characterized by its direct contact/interaction between advisor and advisee. This type of intervention is assumed to be most efficient in changing decisions and behaviour of the target group but has very high costs per contact. Studies report an efficiency factor of 20 % per advice services in households, i.e. about 20 % of the households change behaviour or decisions in response to the advice serve (MultEE, 2016:13).
- "*Networking/sharing best practice*" reflects and utilizes dynamics between peers to adopt innovations due to mutual trust in competence, similar challenges but also in response to competition. The mechanisms underlying their efficiency and effectiveness have been described in diffusion research (Tews 2005). Networks and best practice transfer have become increasingly relevant within the NCI, in receiving a larger share of funding.

For all four information-based clusters, the data necessary to fill the gap "x" to determine the efficiency factor of an intervention is difficult to gather. Default values for each intervention

type do not exist, and the efficiency of interventions differs even within a cluster. Moreover, the addressed behaviour influences the efficiency of an intervention. Consequently, evaluators have to decide whether to collect data via ex-post surveys within the target group or to rely on empirical findings of previous evaluations – when available – or on expert estimates.

In addition to the efficiency of an intervention (gap "x" in Figure 2), there are still two more gaps to fill: the saving values ("y") and the saving lifetime ("z"). Particularly the saving values create difficulties for a calculation or estimation. Regarding the type of addressed GHG-mitigating measure (the addressed behaviour) we distinguish between i) investment decisions, ii) changes in usage patterns and iii) changes in organizational routines. Quantification of savings is easier for induced investments in more efficient technical devices than for induced behavioural or organizational changes. There is an understandable lack of harmonized default values to estimate the saving values but also the lifetime of savings. Even in cases where reference values exist for a given behaviour or bundles of behaviour, these suffer from a rather low reliability – partly due to their lack of transparency, but mainly due to the fact that the induced savings depend on variable context and project specific factors. Therefore, the room for a generalization is rather small.

To sum up, bottom-up calculations of information-based interventions cannot rely on default values for any of the gaps described above. To solve these problems, evaluators are confronted with the necessity to manage the trade-off between gathering project-specific – and as such more reliable – data by conducting time- and cost-intensive monitoring measures or to rely on available reference values, which frequently suffer from a rather low reliability. We assume, that the introduction of a "reliability coefficient", as proposed by the EMEEES-Project (Vreuls et al. 2009:13), can be a way to differentiate data quality and reliability of the calculated savings. Regarding the evaluation results of the information-based interventions, we just started to use this differentiation and introduce discounts to the estimated savings according to their reliability.

However, despite these empirical shortcomings, the approach of establishing causal chains based on the bottom-up method does have an important side effect on the quality of the funded projects. Due to communication by the evaluation team and feedback in NCI projects networking meetings and the fact that the simplified model (see Figure 2) has been added recently to the NCI call for proposals of the Ministry of Environment, project applicants are more prone to think in terms of causal chains and are somehow stimulated to adapt their project and management in order to improve the design of their interventions and their own monitoring of activities.

EVALUATION CRITERIA

The criteria for the evaluation were derived from the stated objectives in the NCI. In designing the criteria and respective indicators we considered the recommendation of the European Commission (2005) that objectives and indicators used should meet the SMART and the RACER characteristics: they should be specific, measurable, achievable, reliable and time-bound; and they should be relevant (closely linked to the objectives to be reached), accepted, credible, easy to monitor (data collection should be possible at low cost), and robust against manipulations.

In order to evaluate the impact of measures that would properly take into account the goals of the NCI initiative, it was perceived paramount to identify appropriate criteria fulfilling the SMART and RACER requirements. In many cases, however, it was difficult to isolate single parameters, qualify their impact and anticipate the robustness of the indicators to be chosen. As a further analytical tool, a matrix was developed to identify and classify the appropriateness of each criterion and of the respective indicators for each of the defined clusters.

The four main criteria chosen for the first evaluation phase were: (i) GHG emission reduction, (ii) model character, (iii) broad impact and (iv) economic effects: In addition, key questions that the evaluation was expected to answer were formulated for each category. Second, these questions were translated into a framework for the evaluation consisting of sub-criteria and indicators. Only three quarters of these criteria at most could be measured in an objective, quantitative way. In the second evaluation phase encompassing NCI activities commencing in 2012, the evaluators performed a critical examination of the appropriateness of all criteria. This step was necessary because the experience of the first evaluation phase had pointed out that not all of them could be evaluated through smart indicators and that – because of the diversity of the projects – the comparability of the indicators was not always given. Moreover, it became necessary to check and adjust these criteria to make them relevant for the high number of new projects supported since 2011 within the so-called "Kommunalrichtlinie" (directives for municipalities and administrations supporting local actions to reduce GHG)[1]. Thus, the criteria were marginally revised and complemented by sub-criteria. The so-called "model character", a sub-criterion in the first evaluation period, was upgraded as criterion and included i.a. the feasibility, transferability and visibility of the measures. A new criterion "continuity" was introduced to encompass the sustainability of the projects beyond the time of the NCI support.

Because of the objectives of the NCI, the core criterion to assess it relates to GHG reduction. As explained in the previous section, the calculation of the GHG effects and the availability of data depended significantly on the intervention type and cluster. To account for the missing direct causal link between the facilitating measure (e.g. awareness campaign) and the induced end-use energy efficiency improvement measures, the evaluation differentiated between realised savings in relation to investment activities and induced savings in relation to information-based interventions.

The evaluation of the defined 'soft' criteria was based on a combination of qualitative and partly quantitative assessment. The economic effects were based on quantitative assessments, while the indirect employment effects were assessed by utilizing an input-model for the German economy.

1. Funding within the „Kommunalrichtlinie" was expanded to include more strategic and management elements. To give an example: climate change managers are now funded over the course of two years to promote implementation of mitigation measures in municipalities. Feasibility, transferability, visibility and continuity of their activities are now considered an important success factor.

Analysis and results

The methodology described above was applied to all individual projects/programs of the NCI that were funded between primo 2008 and ultimo 2017. The presentation below shows the aggregated findings on the NCI level as a whole, by type of intervention or cluster, and by target group. The evaluators were able to attest clear positive effects of the NCI for most evaluation criteria for the period 2008 to 2017.

NCI FUNDING AND FINANCIAL MULTIPLIER EFFECT BY CLUSTER

In the period 2008–2017, close to €800 million of governmental funding was spent on subsidies and grants for projects. About 60 % of the funding was spent on financial support programs (investment-based interventions) like the support scheme for commercial cooling systems, the support program for municipalities to install more efficient street and indoor lighting systems and the stimulus program for micro combined-heat-and-power (CHP) plants in private homes and small businesses. About 10 % of the total funding was spent on municipal climate concept development. Projects funded through information-based interventions like specific advice programs, broad campaigns, provision of knowledge to change investment decisions, education as well as networks and best practice transfer made up 27 % of the total funding amount, see Figure 3.

The evaluation showed that the economic leverage effects of the NCI were high: in total, approximately €1.8 billion of total gross investments were triggered by the NCI (in addition to the funding of close to €800 million). 95 % of these investments were triggered by financial support programs like the stimulus program for micro-CHP plants, for efficient street lighting and commercial cooling systems. These investments correspond to a financial multiplier effect of 3.5 and imply that €3.50 (gross) were invested for each € of support granted, see Figure 4. Taking into account baseline issues, i.e. investments into alternative technologies (or even the same technology) that would have taken place anyway or a little later without the projects/programs, the multiplier effect declines to 2.2, meaning for each € of funding an additional €1.20 were triggered for investment so that €2.20 gross were invested for each € of support granted.

GHG MITIGATION BY CLUSTER

The evaluation assessed that about 16.8 million t of CO_2 over lifetime were saved thanks to the NCI activities from 2008–2017 compared to a reference development without the funding. About 54 % of this was achieved within the cluster financial support programs, mostly through the stimulus program for micro-CHP plants, the support program for municipalities to install more efficient street and indoor lighting systems and the stimulus program for commercial cooling systems. With 33 % of the total lifetime GHG reduction the provision of knowledge to change investment decisions also led to relevant GHG reduction, see Figure 5 GHG reductions from information-based interventions were derived – based on the described bottom-up methodology – only for those projects where data or default values were available. As they are overall less reliable than effects from investment-based interventions, they are presented separately and white-patterned in Figure. For only one project the evaluation team was able to conduct a complete calculation of GHG emissions reductions based on extensive monitoring data. For eight projects, emissions reductions were calculated for parts of activities within projects and subsequently upscaled to account for all activities within a particular project (e.g. funding recipients provided detailed information and data for observed impacts for some of their activities), for another 6 projects GHG reductions were roughly estimated based on information about the kind of activities

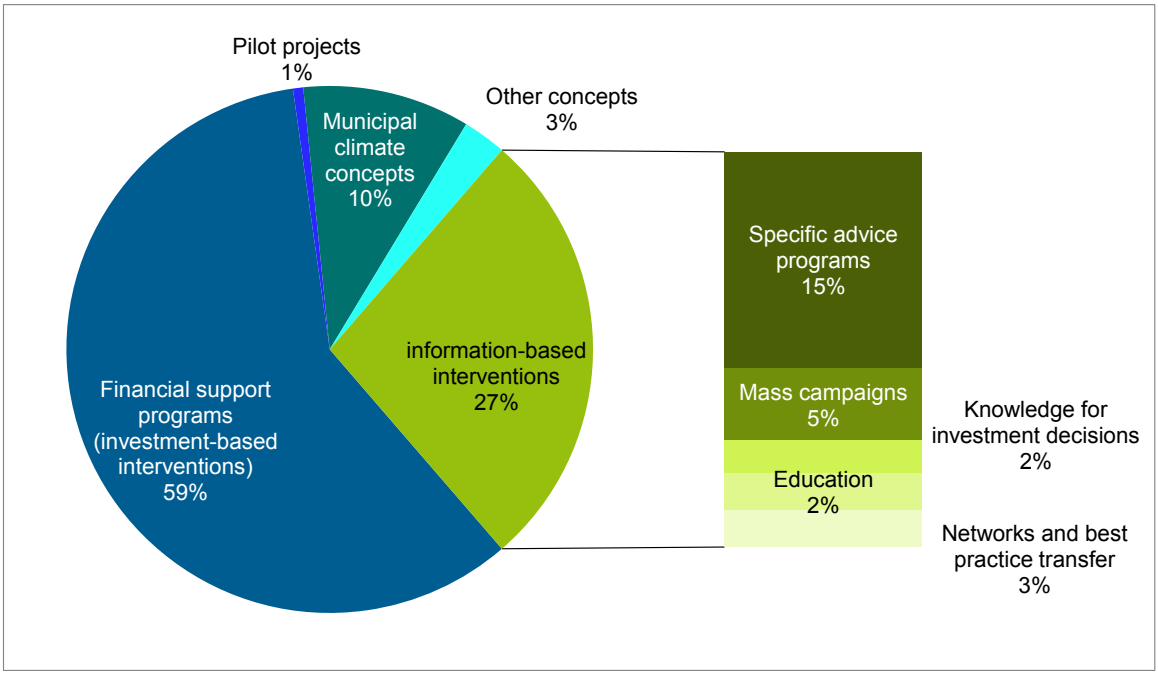

Figure 3. Distribution of funding by cluster.

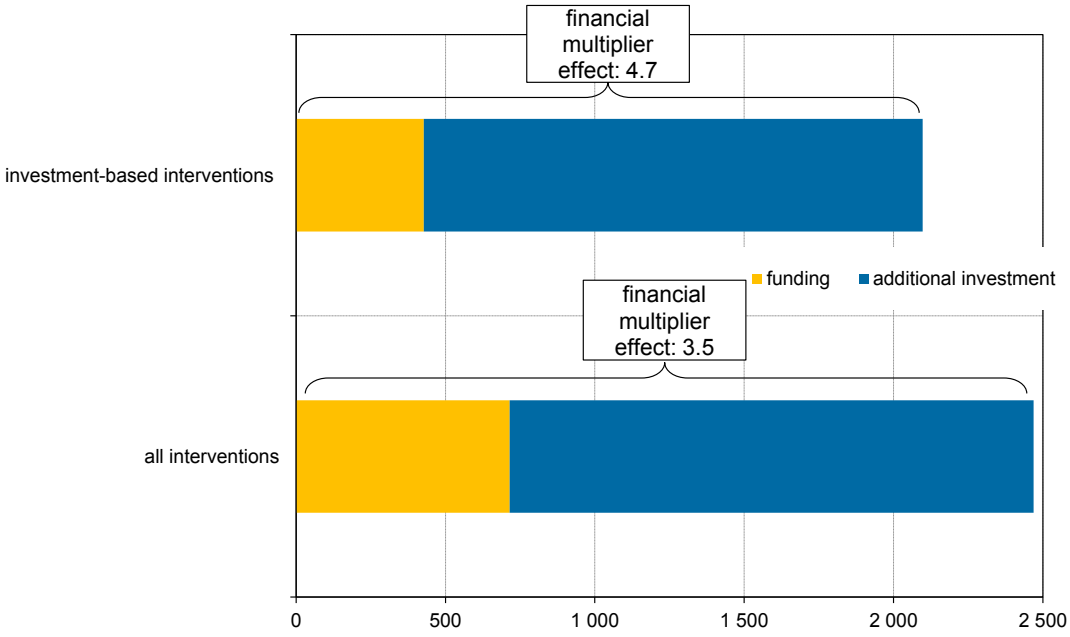

Figure 4. Investments triggered by the NCI.

conducted within the project, the number of persons reached as well as default values for how many of these changed their behaviour in a desired way and default values for the GHG savings the changed behaviour would bring about. For a significant number of the information-based interventions (30 out of 45 projects), however, it was not possible to calculate reliable GHG reductions as data or reference values for the efficiency of the intervention (i.e. for quantifying the actual change in behaviour or investment activity induced by the intervention) could not be obtained.

Overall, GHG mitigation increased substantially over time, as more and more projects were funded and passed from the launch into the implementation phase. Funding efficiency (i.e. mitigated GHG emissions per € of government funding) for financial support programs ranged from 246 kg lifetime GHG reduction per € funded for projects related to in situ stabilisation of landfills, to 85 kg GHG reduction/€ of funding for micro CHP plans in small business and 10 kg GHG/€ of funding for commercial cooling to only 4 kg GHG reduction/€ of NCI funding for diesel-electric hybrid busses. Funding efficiency for information-based interventions highly depends on the reliability and quality of estimated GHG reductions and differs substantially between intervention approaches. Interventions that aim at providing information and advice to pupils and students are successful in raising awareness and knowledge but usually do not yield measurable GHG reductions. Specific advice programs (in particular on-site consulting) on the other hand are more likely to change behaviour and for people to report back on changes so that estimated GHG reductions and consequently calculated funding efficiency are more reliable. Given these limitations we arrived at funding efficiencies ranging from below 1 kg GHG reduction/€ of funding for projects in education to 268 kg GHG reduction/€ of funding for a project providing free in-home energy consultancy to owners of inefficient buildings (Energiekarawane).

FURTHER POSITIVE EFFECTS

Besides the described effects on investments and GHG mitigation, a range of other positive effects were found to have been achieved. NCI projects raised awareness and sensitized consumers, businesses and municipalities on climate action, especially through the visibility of the NCI's projects and programs. Activities within the NCI reached a large number of actors, were geographically spread over Germany and were well tailored to address individual target groups and to serve as models. Furthermore, networks between businesses and municipalities were established that permit sharing best practice, generate new ideas and thus increase the effectiveness of climate mitigation efforts.

With respect to employment, the evaluated projects/programs directly involved more than 14,000 persons (full-time annual equivalents, gross), for example as climate managers or technicians for the installation of the respective equipment. Indirect jobs, for example in the supply industries for renewable energy technologies, micro-CHP and commercial cooling systems were derived using an input-output model for Germany and amounted to approximately 35,000 so that overall about 50,000 people were directly or indirectly involved as a result of the NCI in the period from 2008 to 2017 (on average about 5,000 per year).

EFFECTS BY TARGET GROUP

The projects/programs of the NCI address four target groups (private consumers, businesses, municipalities and educational institutions) and are designed to meet their specific needs and contexts. Projects and programs for consumers include a stimulus program for micro-CHP plants and several information-based projects e.g. to advice on heating optimization and to save energy. The largest program for businesses was the stimulus program for commercial cooling systems. Businesses were furthermore addressed through stimulus programs for

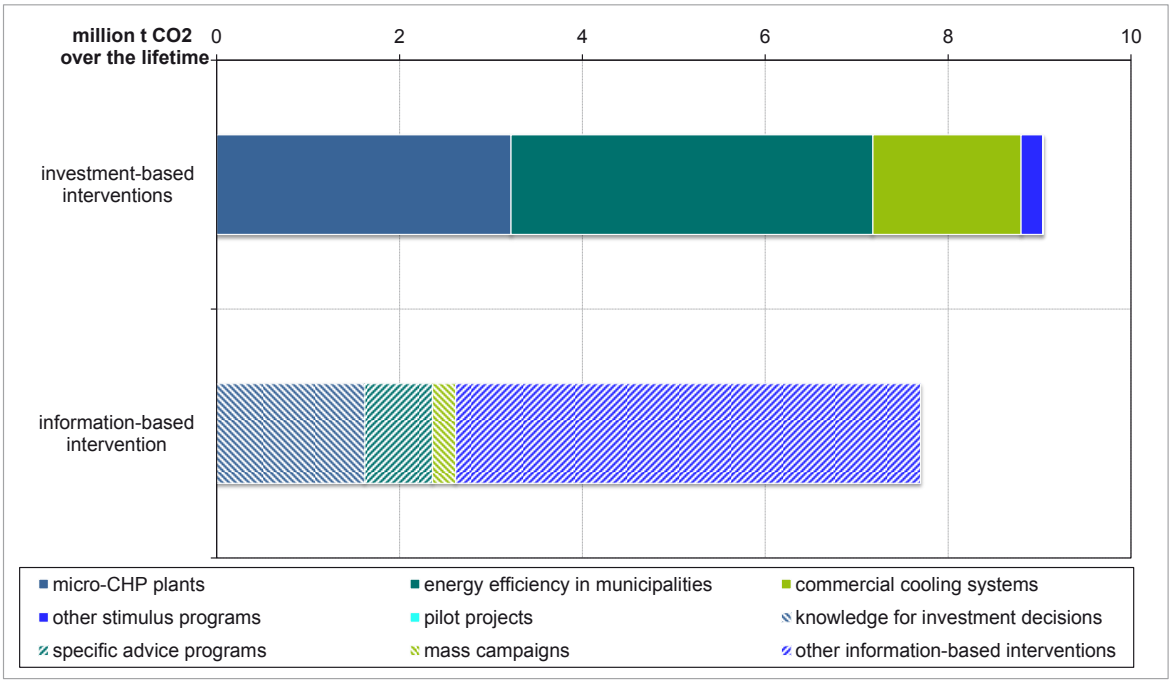

Figure 5. GHG reduction over the lifetime of the funded projects.

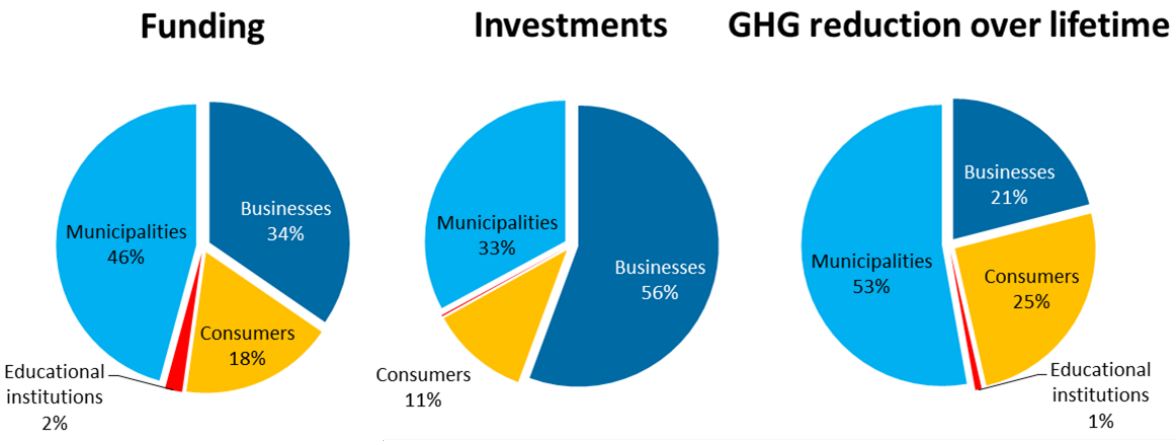

Figure 6. Effects by target group.

agricultural buildings and hybrid busses, the funding of networks, R&D support, a variety of individual projects, including management tools and more. Within municipalities, the development of municipal climate concepts and designated "climate managers" were funded. Furthermore, investment subsidies for electricity saving technologies, e.g. efficient street lighting were granted. Additionally, model projects for carbon neutral municipalities, which included both the concept development and a grant for implementation, were supported. In the 2008–2017 period, the NCI promoted about 14,000 municipality projects in more than 3,200 municipalities (out of about 11,200 municipalities in Germany). To a small extent, energy saving campaigns and other projects in educational institutions were funded since 2011.

Of the €790 million NCI funding between 2008 and 2017, about 46 % were spent on the target group municipalities. 34 % were spent on the target group businesses. With 18 % of the total amount spent within the NCI, the target group consumers received about €140 million of funding. Educational institutions received €15 million through the funding program which is about 2 % of the total funding.

Investments in addition to the funding were mainly triggered within the business segment (more than €976 million); they used e.g. the stimulus program for commercial cooling systems to make a much larger investment in new cooling technologies to save energy, energy costs and reduce their emissions. Municipalities invested more than €577 million in addition to the NCI funding and consumers invested €199 million due to funding through the NCI.

Businesses and consumers had comparable shares in the lifetime **GHG reduction**. With 53 % or almost 8.8 million t of CO_2, most of the GHG reduction was realized in the target group municipalities. Consumers reduced more than 4.2 million t of CO_2 and 3.5 million t of CO_2 were reduced by businesses, see Figure 6.

Conclusions

The success of the National Climate Initiative (NCI) is notable in particular with respect to the diversity of funded projects and programs, the number of relevant actors and target groups reached, the GHG emissions reductions, the stimulation of investment, the visibility and awareness raising with consumers, municipality and business. The evaluation identified high flexibility and good supervision (e.g. with the help of continuous evaluation and expert support) as particular strengths, which should be used to buttress its further development. These strengths make the NCI an attractive partner for cooperation, e.g. with local authorities, organizations, industrial companies or associations, and consumer groups.

From the outset, the NCI has been stepping on new ground by promoting a multitude of different interventions. It combines innovative approaches such as the energy savings check project for low-income households[2], with long-standing government programs like the investment subsidies for efficient cooling or heating.

Transformation towards a sustainable society requires fundamental behavioural changes which will inevitably face resistance, for example due to required changes in daily routines or higher upfront investment costs for low emissions technologies or products. A portfolio of different approaches is considered essential by policy makers to overcome barriers. The evaluation found distinct differences in terms of impact between information-based and investment-based policy instruments as well as between the various information-based project approaches. Some approaches might be reaching a large number of people but have limited impact on changing behaviour. Others create behaviour change but have only limited effect on reducing GHG levels. The adopted measures target different energy and emission saving opportunities – both in terms of GHG savings per behaviour change and in terms of the quality of this change. Some of the GHG savings may be realized instantly, while other approaches can induce changes only in the medium or even longer term. The sample of interventions was not large enough for a systematic and statistically significant comparison of intervention effectiveness. Nonetheless, our evaluation gives indication for the following hypotheses regarding impacts:

- Peer-to-peer approaches seem to work best within the NCI, e.g. from consumer to consumer, business to business, from municipality to municipality (or within municipalities), within schools/between schools,
- Communication and exchange among project implementers on activities and outcomes seem to be key to provide for mutual learning and stimulation and allow for new project ideas to be developed and implemented. Regular NCI conferences bring together funding recipients/project developers from all over the NCI (including funders). These conferences present best practice examples, stimulate ideas, provide workshops on barriers, milestones, reporting, monitoring and evaluation and stimulate networks beyond the conferences. They are considered an important and innovative element of the NCI.
- In order to convey messages and change in behaviour, it is more efficient to use those communication and network channels that provide advice anyway and add climate-related information (e.g. product energy efficiency). For example, using well-known customer information platforms (www.ecotopten.de) allowed projects to reach customers more effectively than introducing new forms of activities through other channels.
- Increasingly involving municipalities in climate change activities should continue to be promoted, as many mitigation potentials lie within municipalities and set examples for its population, e.g. insulation and efficient lighting in municipal buildings, efficient street lighting, public spending on sustainable products, public transportation, city planning etc.
- Different target groups (i.e. consumers, business, municipalities) are receptive to different interventions. While the municipalities were initially very receptive to financial support for planning measures and concepts, this changed towards implementation of measures. Consumers were more likely to seek specific information for specific decisions. Businesses seemed to benefit most from networks, best practice and management tools.
- Generally, "soft" measures (information, motivation) for changing one-off behaviour (like large purchases) can deliver more climate benefits per intervention effort than soft measures for changing everyday routines (like using public transport instead of private cars). While cost per behaviour change might be comparable, soft measures for changing routine behaviour are likely to have only short impact periods (CEN, 2007). In addition, the GHG savings per instance of changed behaviour are typically very small.
- Many projects have a multitude of beneficial effects and provide for long-term changes in behaviour, set examples, allow for transferability, copying or adaptation in different settings. However, on the economic evaluation side soft or capital-intensive innovative measures might not be able to compete. Often, they have low or no financial multiplier effect, low immediate GHG effect and are dependent on continuous public funding. Nevertheless, the evaluation team concludes that these projects are indispensable as they provide the pathway for societal transformation and long-term mitigation. They provide experience with new routines or technologies and might trigger new ideas.

The NCI has built on these insights and adapted over the last decade. While initially a large focus was put on developing concepts, pilot projects and strategies, the focus has shifted towards implementation of measures and investment into efficient technology. For municipalities, for example, a substantial share of funding now goes to climate managers who are in charge of implementing mitigation measures. Additionally, direct financial support is provided to municipalities for efficient street and indoor lighting. Applications for funding are now required to detail their causal chains based on the bottom-up methodology. This is particularly relevant for projects that qualify as information-based interventions as this allows gaining insights into each project's impact on GHG mitigation and helps monitoring and evaluation.

2. The project includes a training program for the long-term unemployed to provide energy saving advisory services for low-income households.

The NCI benefits from its broad portfolio both in terms of target groups and types of intervention. It manages to tap potentials that are not addressed through more conventional policy instruments (such as energy taxes, emissions trading or other top-down regulations) by means of supporting measures and activities that are tailored to target groups.

The evaluation team concluded that the NCI is a quick-learning, innovative and effective instrument for climate action in Germany. The evaluation highlights the importance of a consistent monitoring and assessment of programs and projects which are considered essential to promote the effectiveness and efficiency of programs/projects and to redesign – if needed – in order to keep Germany on track for reaching its goal to shift to a sustainable economy.

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