

Interim Evaluation Swiss Radon Programme, 1994 - 2014

Executive Summary

Project Team:

Cornelia Furrer, lic. sc.ès pol. (Project Manager)

Manuela Oetterli, dipl. Natw. ETH, MPH (Project Collaborator)

Andreas Balthasar, Dr. rer. pol. (Quality Assurance based on Scientific Evaluation)

Commissioned by the Federal Office of Public Health (FOPH)

Lucerne, 15 August 2004

Interim Evaluation of the Swiss Radon Programme, 1994 - 2014

Executive summary

Authors: Cornelia Furrer
Manuela Oetterli
Dr. Andreas Balthasar

Institution: Interface Institut für Politikstudien, Lucerne

Commissioned by the Federal Office of Public Health (FOPH)

Lucerne, August 2004

Abstract

The interim evaluation uses methodology based on political science to assess the conception, implementation and effectiveness of the Swiss Radon Programme. The focus is on the activities of the Radon Technical and Information Centre of the Federal Office of Public Health (FOPH). The study shows that it has been possible to make progress towards eliminating the radon problem. In particular, it was possible to complete one important stage - the compilation of the radon map - within the specified period. With regard to implementation, the actions taken by the Technical and Information Centre and the cooperation among the various key players may be described as good in terms of quantity as well as quality. However, the programme displays some substantial weaknesses in terms of its conception. In particular, the definition of the goals is not sufficiently binding, the spread of responsibilities between the Confederation and the Cantons is not conclusively clarified, and there is no goal-oriented implementation strategy. On this basis, it cannot be expected that it will be possible to attain the goals that have been set for 2014.

Key words

Radon, programme, Radiological Protection Ordinance, evaluation, concept, implementation, effectiveness, cooperation among key players

Introduction

Radon is a radioactive inert gas which is produced when uranium contained in the soil disintegrates. If it is inhaled in by humans, harmful products of disintegration are deposited in the lungs. According to an estimate by the Federal Office of Public Health (FOPH), 200 to 300 deaths from lung cancer are attributable to radon pollution in Switzerland each year. For this reason, the Confederation has established goals and actions to combat radon contamination in Switzerland in articles 110 to 118 of the Radiological Protection Ordinance (StSV) on the basis of article 24 of the Radiological Protection Act (StSG), and it passed the Radiological Protection Ordinance in 1994.¹ The FOPH was entrusted with the implementation of these articles, and it established the Radon Technical and Information Centre for this purpose.² The Swiss Radon Programme was launched in 1994. Ten years after the start of the Radon Programme, the FOPH commissioned the Interface Institute of Political Studies to carry out an interim evaluation. The goal of the evaluation is to examine the concept and status of the Radon Programme and to provide a basis for decisions to be taken regarding further procedure.

Description of the evaluandum

The Radon Programme is based on Articles 110 to 118 of the Radiological Protection Ordinance, which stipulates a limit value of 1,000 Bq/m³ for rooms where people reside or spend time. For new buildings, conversions and refurbishments, a guideline value of 400 Bq/m³ is applicable provided that this can be attained with simple construction measures. By 2004, the aim is to compile a radon map to provide an overview of the areas particularly affected by radon contamination, in accordance with the goals of the Technical and Information Centre. As regards refurbishments, the Technical and Information Centre's goal is to have found and refurbished all the buildings which exceed the limit values in the radon areas by 2014. In addition, values for all new buildings or conversions should be less than the limit value and (as far as possible) should fall below the guideline value as well. This evalua-

¹ Radiological Protection Ordinance (StSV) dated 22 June 1994, Articles 110-118.

² As regards the radon problem, the SFOPH is only responsible for public and private residential buildings. Accordingly, the interim evaluation is restricted to these buildings. All workplaces are therefore excluded (except those in public buildings); the Swiss National Accident Insurance Organisation (SUVA) is responsible for these.

tion focuses on the FOPH's Technical and Information Centre, whose tasks are outlined in the Radiological Protection Ordinance.

Evaluation questions

The leading questions for the evaluation are as follows:

1. Is the strategy to attain the programme's goals relevant and expedient? (Evaluation of the concept)
2. In which areas of action are improvements needed so that the Radon Technical and Information Centre of the FOPH can make an optimal contribution in the short and medium terms towards achieving the intended effects of the Radon Programme? (Evaluation of actions)
3. In which areas has the cooperation among the participants (the Confederation, the Cantons, the Communes and construction specialists) and the affected parties (owners of homes and buildings, tenants) proven successful, and in which areas is there a need for improvements so that the programme's goals can be attained? What is the influence of contextual conditions? (Assessment of the cooperation among the various key players)

Methods and approach of the study

The *concept evaluation* indicates whether the elements in the strategy are suitable in order to attain the goals of the Radon Programme efficiently. In addition, there is a summary comparison of Switzerland's strategy with those of Sweden, Great Britain, Germany, Austria and the South Tyrol. The empirical data were obtained by means of a documentary analysis together with eight qualitative and thematically linked interviews with key players in the Radon Programme and foreign experts. The interviews took place between October and November 2003. Two radon meetings organised by the FOPH were also attended, in November 2003 and March 2004. The goal of the *evaluation of actions* is to measure the effects to date and to assess how far the Technical and Information Centre's actions have triggered independent activities on the part of the Cantons. The database primarily comprises 15 qualitative interviews with experts, based on linked key themes, which were conducted between February and March 2004. The basis for the as-

assessment of *cooperation among the various key players* is a standardised telephone survey of 33 key players in March 2004.

Results

We present the results of the interim evaluation below, with the corresponding questions.

Is the strategy to attain the programme's goals relevant and expedient?

With regard to the *relevance of the strategy*, the comparison between the Radon Programme and activities abroad indicates that radon constitutes an internationally acknowledged problem. If radon is compared with other risk factors occurring in living space, it becomes apparent that the estimated death rate due to a case of radon pollution is considerably higher. The evaluation arrives at the conclusion that the question about the relevance of the strategy should definitely be answered in the affirmative.

With respect to the *expediency of the strategy*, it was primarily the coherence of the programme which was examined. The evaluation identifies shortcomings in the strategy at the levels of goals, actions and organisation.

- At the *goal level*, it can firstly be stated that the phrasing of the refurbishment goals in the Radiological Protection Ordinance is not sufficiently precise, and this phrasing has consequently been interpreted differently by the key players (see Table D I). Secondly, the goal for refurbishment is only described as a "vision" by the Technical and Information Centre. This raises the question of the priority accorded to attaining the goal. Thirdly, there are no (annual) sub-goals (goal stages). Fourthly, the limit value is set too high for comprehensive protection of the population's health.
- At the *level of actions*, the strategy leaves open the question of how to motivate the Cantons (which are primarily responsible for implementation) to pay sufficient attention to the radon problem. We regard it as questionable whether this can be achieved solely by advice and consulting.

- At the *organisational level* we find that the responsibilities for attaining the goals are not clarified sufficiently between the Confederation and the Cantons, especially as regards refurbishments.

D I: Refurbishment goals as stated in the Radiological Protection Ordinance and their interpretation

	As per the Radiological Protection Ordinance	Interpretation by Radon Technical and Information Centre	Interpretation by Cantons
Refurbishment goal	Article 110, Paragraph 1: For radon gas concentrations, a limit value averaged over one year of 1,000 Bq/m ³ shall apply. Article 116, Paragraph 1: In areas with higher radon gas concentrations, the Cantons shall stipulate the refurbishment measures that are to be taken for rooms where the limit values stated in Article 110, Paragraph 1 are exceeded.	By 2014, <i>all</i> rooms in the radon areas where people reside or spend time and where limit values are exceeded should be refurbished.	By 2014, all rooms where people reside or spend time <i>which have been measured by 2004</i> and which show that the limit values have been exceeded should be refurbished.
Estimated number of buildings to be refurbished	-	5,000	600

In which areas of action are improvements needed so that the Radon Technical and Information Centre can make an optimal contribution in the short and medium terms towards achieving the intended effects of the Radon Programme?

The areas of action selected in order to answer this question were "Support for the Cantons" and "Information of the Public". The study shows that the Technical and Information Centre makes good use of the possibilities within the existing overall conditions, and that it performs well in quantitative as well as qualitative terms. However, another important result of this section of the evaluation is that the implementation of the Radon Programme suffers from the conceptual weaknesses listed above at the levels of goals, actions and organisation.

The examination of the action area comprising *Support for the Cantons* indicates that:

- the intended *compilation of the radon map* in accordance with the Radiological Protection Ordinance was achieved by the specified deadline of 2004. Hence this first sub-goal can be described as having been attained.
- the quality as well as the quantity of actions carried out in connection with *refurbishments* can be assessed as positive. Nevertheless, little independent activity was achieved on the part of the Cantons. The refurbishment goal of the Technical and Information Centre of refurbishing all the approximately 5,000 buildings where the limit values are exceeded in the radon area is therefore still a very long way away. Above all, in the short term, the Technical and Information Centre must manage to halt the retreat by the Cantons and it must succeed in disseminating technical know-how about refurbishment.
- it is impossible to make any statements about goal attainment to date in connection with *conversions*, due to the lack of data.
- in connection with *new buildings*, the Radon Technical and Information Centre states that the guideline values are only exceeded in isolated instances and the limit values are not exceeded at all, provided that the buildings are constructed correctly and according to the state-of-the-art in the building sector.
- the Cantonal representatives assessed the *cooperation* with the Radon Technical and Information Centre as very constructive, and expressed high praise for the FOPH's information events.

There is no reliable empirical basis regarding the quality and effectiveness of the actions in connection with *Information of the Public*. However, it seems that public awareness is lacking, with the exception of a number of radon areas - although the question as to the sustainability of awareness-raising activities remains open here too. The key problem at the level of actions is that the Technical and Information Centre currently has no implementation strategy that would clarify which measures should be used to achieve which sub-goals by when, and how the individual actions are interrelated.

In which areas has the cooperation between the participants (the Confederation, the Cantons, the Communes and construction specialists) and the affected parties (owners of homes and buildings, tenants) proven successful? In which areas is there a need for improvements so that the programme's goals can be attained? What is the influence of contextual conditions?

The assessment of the cooperation among key players shows that the quality of this cooperation is rated as high, and the way the key players interrelate is assessed as agreeable. However, certain groups of key players have hardly been involved up to now. These include the associations of homeowners / building owners, tenants and the construction industry. In overall terms, the evaluation arrives at the conclusion that the cooperation among the key players in the Radon Programme has proven successful so far. However, adjustments are needed in order to attain the refurbishment goals. In particular, the Cantons and communes should be integrated more fully into the responsibility. Moreover, mediators and multipliers should systematically be incorporated into the cooperation so as to broaden the basis of support for the programme.

Regarding the influence of the contextual conditions, it can be stated on the one hand that the cooperation to date between the key players and the target groups in the radon areas has benefited from the somewhat higher level of risk awareness among the population. On the other hand, the pressure to economise that has arisen in the Cantons during recent years has had a negative effect on the intensity of cooperation, since human resources dealing with the radon problem in Cantonal administrations have become even more scarce. To counter this trend and to make it easier for the key players to implement the actions, it is necessary to inform the public and raise their awareness on a wide scale.

Conclusions

The empirical results show that the existing strategy of the Radon Technical and Information Centre has achieved progress towards eliminating the radon problem. However, it has also become clear that the goals of the Technical and Information Centre, especially in connection with refurbishments, cannot be achieved by 2014 with the approach pursued.

Recommendations

The FOPH needs to choose its future strategy for the Radon Programme in cooperation with the Cantons. The implementation of the following recommendations is indispensable, regardless of which strategy is selected.

Recommendation 1

The FOPH must arrive at a binding clarification of the refurbishment goals for the Radon Programme together with the Cantons.

At present, the Confederation and the Cantons have diverging views of the goals due to the imprecise phrasing in the Radiological Protection Ordinance. As part of the necessary clarification of the goals, the FOPH should answer the following three questions:

- Should the limit and guideline values be generally lowered (for refurbishments, but also for new buildings and conversions)?³
- Should the refurbishment goals be solely applicable to radon areas, or should their scope of application be extended to the whole of Switzerland, on the principle of equal treatment?
- Should the responsibility for refurbishing buildings rest primarily with the state, or with the individual?

The choice of realistic goals for the Radon Programme depends largely on the available resources and the possibilities provided by the legislation. For this reason, the Technical and Information Centre - together with the Cantons - must clarify whether, and to what extent, additional resources can be allocated. If the attainment of the goals relies on the commitment of the Cantons, then the goals must first be clarified in consultation with them.

³ It is questionable whether adherence to the currently applicable *limit value* of 1,000 Bq/m³ makes a major contribution towards solving the radon health problem. Even if all residential buildings in Switzerland were to keep to this value, the 200 to 300 deaths per year caused by radon could merely be reduced by an estimated 10 to 15 per cent. To achieve a greater effect, the limit value would have to be lowered to less than the present guideline value of 400 Bq/m³ (in Sweden, for example, a guideline value of 200 Bq/m³ is applicable, and all houses must conform to it). As a consequence, the number of houses requiring refurbishment in Switzerland would be multiplied several times over.

Recommendation 2

The responsibility for achieving the goals must be regulated on a binding basis between the FOPH and the Cantons.

It can be seen that the Cantons are retreating from the radon problem at present. Many of them hold the view that they have accomplished their part of the task. The Technical and Information Centre holds a different view. For this reason, the responsibilities for achieving the goals must be clarified on a binding basis between the Confederation and the Cantons, especially in connection with refurbishments, but also as regards new buildings and conversions. There should be an examination of whether adjustments to the Radiological Protection Ordinance are indicated for this purpose, and whether more instruments for implementation must be made available to the Technical and Information Centre so that it can issue appropriate instructions to the Cantons.

Recommendation 3

In connection with construction applications for new buildings and conversions, the Cantons must oblige building owners to take suitable actions to conform to the limit and/or guideline values.

According to the Radiological Protection Ordinance, all the Cantons have to take suitable actions with regard to construction in order to ensure that no new or converted buildings show values in excess of the limit values, or that efforts are made to keep to the guideline values. On the basis of available experience and with a view to attaining the goals, we advise the Cantons to introduce the so-called "Bern Model". This provides for a form to be appended to all construction applications, to be signed by the building owners. In this way, the building owner becomes aware of the radon problem and undertakes to carry out suitable actions. As part of the acceptance procedure for buildings, the Cantons must monitor compliance with the limit and guideline values on a random sample basis.

Recommendation 4

The Technical and Information Centre must specify the goals of the Radon Programme in annual "sub-goals".

It is currently unclear which sub-goals should be attained by which dates. This makes ongoing effect-oriented management of the Radon Programme very difficult. Consequently, the Technical and Information Centre should formulate sub-goals. This approach includes a differentiation between process goals and effect goals, and a definition of the means that can be used to measure goal attainment. The Technical and Information Centre must consider the specific further procedure on this basis.

Recommendation 5

The Technical and Information Centre must draw up an implementation strategy which includes all the areas.

At the moment, there is no concept showing which actions should be used to obtain which goals by which date, nor how the individual actions are interrelated. This creates the need for an implementation strategy which includes all the areas of activity. We assume that the future strategy will follow on from the preliminary work that has already been accomplished. Nevertheless, measures at the persuasive, regulative and financial levels could be necessary.⁴

Recommendation 6

Public relations work should be given higher priority among the activities of the Technical and Information Centre in the future.

Public awareness of the risks is low at present. However, the population's perception of the risk involved in the radon problem is decisive for the success of the programme. The Radon Programme will only succeed in finding the political and social support that it needs in order to attain the goals against a background of public awareness.

⁴ Persuasive level = level of conviction.

Recommendation 7

To give the Programme broader-based support, the Technical and Information Centre needs to seek allies.

Until now, the Technical and Information Centre has been a "lone warrior" against the radon problem. It has to be assumed that the present amount of Federal resources for raising awareness available to the Technical and Information Centre is hardly going to increase in the future. This makes it very important for the programme to become more broadly based. The most promising way of achieving this is to seek allies who will make a commitment to the radon problem in their own interest. Specifically, the associations of homeowners / building owners and tenants, the preventive health organisations and the health care profession are obvious candidates. Associations in the construction industry - which could benefit economically from more refurbishments - could also be important.

Correspondence address

Institut für Politikstudien
 lic. sc.ès pol. Cornelia Furrer
 Seidenhofstr. 12
 6003 Lucerne
furrer@interface-politikstudien.ch
www.interface-politikstudien.ch

Publication details

Contract number:	03.000639
Contract period:	from August 2003 to September 2004
Data collection period:	September 2003 until June 2004
Manager of the Evaluation Project in the FOPH:	Herbert Brunold Evaluation Management and Resource Centre (CCE) of the Federal Office of Public Health (FOPH)
Meta-Evaluation:	The complete report underwent a meta-evaluation by the Evaluation Management and Resource Centre (CCE) of the Federal Office of Public Health (FOPH). The meta-evaluation (scientific and ethical quality control of an evaluation) is based on the evaluation standards of the Swiss Evaluation Society, SEVAL.
Reference:	Evaluation Management and Resource Centre (CCE) evaluation@FOPH.admin.ch
Translation:	ability translations, Ursina Schelling