INTERIM REPORT ASSESSMENT FICHE

STATE AID SA.61388 - GERMANY

"BLOCK-EXEMPTED FEDERAL SCHEME FOR DECARBONISATION OF INDUSTRY"

BRIEF OVERVIEW

Nature of the evaluation report: Interim (methodological) report

Does the report clearly specify the aspects that have or have not been covered, and eventually the reasons behind this choice?

The report is a first methodological report that discusses the data collection process and the empirical strategy that will be adopted for carrying out the evaluation. It precedes an interim evaluation report, foreseen for 2023, that will cover the first phase of implementation of the scheme and a final and comprehensive evaluation report. In this respect, reasons behind any choices on both data and strategy seem to be sufficiently motivated.

Scheme ID

Objectives	Research question	Methodology Foreseen	Methodology Applied
Effectiveness	N/A	N/A	N/A
Direct effects	- Has the aid resulted in investments in facilities for the application and implementation of climate protection technologies on an industrial scale in supported undertakings in the energy-intensive industry, above and beyond the establishment of low or zero emission production capacities in non-supported undertakings? - Has the aid led to an increase in the research, development or testing of innovative climate protection technologies more in supported undertakings in the energy-intensive industry as compared to non-supported undertaking? - Have decarbonisation projects been promoted in all sectors relevant to the Funding Directive, both in small, medium and large enterprises and in the expected number?	Matching DiD	Matching DiD Other qualitative

	- Has the aid led to a reduction of the respective GHG emissions (relative to the volume of production affected by the aid) of supported undertakings in the energy-intensive industry through decarbonisation projects following the grant of aid?		
Indirect effects	- Has the aid contributed to the use or potential use of the supported technologies in other companies, sectors and regions (spill-over effects)? - Has the aid led to a change in supply and demand structures in the markets towards products and technologies with low or zero GHG emissions? - Did the aid result in the lack of private investment in the supported industrial sectors due to the granting of the aid (crowding-out)?	Other quantitative Other qualitative	Other quantitative Other qualitative
Wider economy effects	- Has the aid led to a change in the competitive position of the beneficiaries compared to non-beneficiaries? - Has the aid led to a change in any tendencies towards relocation of the energy-intensive industry (carbon leakage)?	Other quantitative Other qualitative	Other quantitative Other qualitative DiD
Appropriateness and proportionality	- Have obstacles in the form of inhibiting factors proper to the aid instrument been identified? - Could the corresponding decarbonisation measures have also been stimulated with a lower budget or aid intensities?	Other quantitative Other qualitative	Other quantitative Other qualitative

<u>Does the report comply with the evaluation plan</u>?

The interim methodological report complies with the evaluation plan, which foresees a methodological report on the evaluation of the aid scheme containing both descriptive statistics on the implementation of the funding programme and a description of the methodological approaches for the evaluation. The submitted methodological report provides details of the approaches that can be used for the evaluation;

it also contains a small section on the state of implementation of the funding programme with few descriptive statistics.

Are the methodologies applied so far adequate to estimate the causal impact of the aid?

The report describes and assesses the methodologies and the strategies that will be adopted in the evaluation. The envisaged method is matching difference-in-differences, which allows the identification of the causal direct impact of the aid.

Did the evaluator encounter issues with collecting and handling sufficient, consistent and accurate data?

The methodological report describes the data available for the evaluation, highlighting potential challenges and issues for each result indicator and proposing, in some cases, mitigation strategies.

Does the report set an analytical framework to effectively communicate consistent results?

In the current form, the report simply outlines data and methods that should be used during the interim and final evaluation phases, without any reference to expected results.

Overall evaluation:

INTRODUCTION

The following report aims to summarise the logic, the design, and the partial results of the interim evaluation. More in details, the report begins with an overview of the analysis carried out within the evaluation of the Aid. Then it describes data, sampling, and methods used for the evaluation. Finally, it provides specific comments and suggestions and discusses the consistency of the analysis.

ANALYSIS (DESCRIPTION)

Brief description

The report is a first interim methodological report that, according to the evaluation plan submitted to the European Commission, shall contain descriptive statistics (if available) as well as a detailed description of the data and the methodologies that will be utilised for the evaluation. This report refines the evaluation design set out in the evaluation plan, focussing in particular on the methods and data to be used.

Details of the aid scheme

The scheme allows for funding projects undertaken by energy-intensive industries that aim at the development of innovative climate protection technologies and their utilisation on an industrial scale, in particular to reduce or avoid industrial process-related greenhouse gas emissions.

The scheme aims at enabling industry to research, develop, test, scale up and demonstrate innovative decarbonisation technologies and to facilitate their use in environmental protection and renewable energy investments on an industrial scale, by investing into appropriate production facilities for the reduction or avoidance of process-related greenhouse gas ("GHG") emissions, in view ultimately to achieve net-zero GHG emissions in the industrial sector by 2050.

At the beneficiary level, the following outcomes are expected by the German authorities:

a) Increase in private spending in R&D&I, in particular in innovative climate protection technologies;

b) Increase of competitiveness;

c) Improvement and increase of innovativeness, including for the beneficiaries and for other undertakings, as well as industries and regions via spill-overs;

d) Reduction or avoidance of industrial process-related emissions, thus industrial GHG emissions, through the implementation of decarbonisation projects.

The aid scheme provides support in the form of direct grant/interest rate subsidies as partial financing, to undertakings operating in the targeted energy intensive industrial sectors, following an assessment of the application projects based upon specific selection criteria.

Data and sampling

For the purposes of the evaluation, data in respect of beneficiaries and non-beneficiaries are gathered from different sources. As for the former, the relevant data are collected during the application process or at a later stage upon request of the Federal Ministry for the Environment (BMU). As for the latter, the relevant data are collected through a dedicated multiannual survey.

Method

According to the evaluation plan, the causal effects should be assessed by applying a matching Difference-in-Differences. This method compares the change in the target achievement indicators for the group of subsidised undertakings (Treatment Group) over time before and after funding with that of

non-assisted enterprises (Control group). Important factors in the application of this procedure are parallel trends assumption prior to the introduction of the measure in the treatment and control group, as well as the control group's non-influence by the measure (no spill-over effects).

The methodological report describes and motivates the envisaged methodology (matching Difference-in-Differences) and the requirements for the data, in terms of granularity, quality and temporal perspective, which should be used in such an evaluation. It then discusses the construction of the treatment and the control groups in order to make them as homogeneous as possible. The report also allows the existence of alternative approaches for the construction of the control group in case some data are not available.

As for the indirect effects, proportionality and appropriateness of the aid, the evaluation plan provided their evaluation based on qualitative methods such as interview surveys and desk research. The methodological report proposes to include also some case studies to these qualitative methods.

Results

This interim methodological report, as foreseen, only provides a discussion of description of the data and the methodologies. Thus, no results on the causal impact of the scheme are presented at this stage.

CONCLUSIONS (STRENGTHS AND WEAKNESSES)

The methodological report is clear and detailed in discussing the methodologies to be used in the evaluation of the aid scheme and the data sources underlying each result indicator.

The report thoroughly discusses each evaluation question and the relative results indicator, debating the strengths and weaknesses of each data source, while recommending improvements in the data collection procedure and suggesting alternative data sources. Several potential issues are flagged and recognised, and, in some cases, possible mitigation strategies are proposed in the absence of better quantitative approach.

The choice of the methodologies needed to answer the evaluation questions is well illustrated. In particular, the identification of the most appropriate control group to be employed in the difference-in-differences is accurately examined for each evaluation question, and various options are considered.

The report also highlights the dependence of the analysis on the time perspective for the evaluation and the likely existence of significant limitations in data availability and relevance for the evaluation report of 2023, which should therefore be considered as another interim report.

However, a list of potential improvements in view of the intermediate and final analyses is reported below:

- It is not clear if the control group is always defined applying a matching procedure. In some instances, the evaluator refers to a "synthetic virtual non-treatment group" obtained as the

difference between the pool of plants in Germany and those already included in the treated group. This selection procedure might yield biased results as non-treated companies might differ from treated ones in both observables and non-observable characteristics and thus do not represent a good comparison group. Resorting to a matching algorithm might help mitigate this concern at least for the differences based on observables.

- The methodological report never refers to robustness and sensitivity checks to confirm the validity of the results. As far as the Difference-in-Differences is concerned, the usual sensitivity and falsification tests (placebo, fake year of implementation, fake control group) is worth applying with a focus on the validity of the common trend assumption which is crucial for the method to be valid. Related to this, it should also be clarified whether data will have a panel structure or not. Panel analyses might benefit from the inclusion of a battery of fixed effects, also allowing to control for unobserved heterogeneities and yielding more precise estimates.

- The level of the analysis shall also be specified especially when the level of data granularity differs between treated and controls. Moreover, it would be also advisable to describe the timeline of the data collection and the respective frequency (yearly, quarterly, monthly, etc).