Part III.8 - Supplementary Information Sheet for the notification of an evaluation plan

Member States must use this sheet for the notification of an evaluation plan pursuant to Art. 1(2)(a) of Regulation (EU) No 651/2014[1] and in the case of a notified aid scheme subject to an evaluation as provided in the relevant Commission guidelines.

Please refer to the Commission Staff Working Document "Common methodology for State aid evaluation"[2] for guidance on the drafting of an evaluation plan.

1. Identification of the aid scheme to be evaluated

(1) Title of the aid scheme:

Hydrogen production through electrolysis 2024

(1) Does the evaluation plan concern:

(a) ☐ a scheme subject to evaluation pursuant to Article 1(2)(a) of Regulation (EU) No 651/2014?

(b) X☐ a scheme notified to the Commission pursuant to Article 108(3) TFEU?

(2) Reference of the scheme (to be completed by the Commission):

SA.110068 (2023/N)

(3) Please list any existing *ex-ante* evaluations or impact assessments for the aid scheme and ex-post evaluations or studies conducted in the past on predecessors of the aid scheme or on similar schemes. For each of those studies, please provide the following information: (a) a brief description of the study's objectives, methodologies used, results and conclusions, and (b) specific challenges that the evaluations and studies might have faced from a methodological point of view, for example data availability that are relevant for the assessment of the current evaluation plan. If appropriate, please identify relevant areas or topics not covered by previous evaluation plans that should be the subject of the current evaluation. Please provide the summaries of such evaluations and studies in annex and, when available, the internet links to the documents concerned:

Not applicable

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1 Commission Regulation (EU) No 651/2014 of 17 June 2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty (OJ L 187, 26.6.2014, p. 1).

2 SWD(2014)179 final of 28.5.2014.

2. Objectives of the aid scheme to be evaluated[3]

2.1. Please provide a description of the aid scheme specifying the needs and problems the scheme intends to address and the intended categories of beneficiaries, for example size, sectors, location, indicative number:

Renewable hydrogen is an indispensable part of the energy mix required for climate neutrality. However, the electrolysis technology necessary to produce that renewable hydrogen is still too immature to produce renewable hydrogen at the necessary volumes and price. This proposed aid scheme intends to ramp up electrolysis capacity in the Netherlands, in turn reducing technological risks, identifying challenges for further innovation, incentivizing standardization throughout the supply chain and, in turn, bringing down costs. The increase in electrolysis capacity is required for the future decarbonization of sectors like industry and heavy mobility. In the short run it also leads to environmental benefits as the use of renewable hydrogen will reduce emissions by its hydrogen users.

The scheme is applicable for electrolyser projects from 0,5 MW and up. The estimated capacity that can be supported with the available budget depends on the assumptions about the requested subsidy per MW. In a report by Berenschot commissioned by the Ministry of Economic Affairs and Climate Policy, estimations of around €4,5 - €5 million per MW seem realistic. After the first round of this tender, we see that projects bid more competitively around €2,5 - €3 million per MW. Therefore, we expect the total capacity that can be subsidized to be in the range of 200 MW to 400 MW. We are not yet certain whether the economies of scale of larger projects weigh up to potentially lower risks in smaller projects and therefore what type of projects would win. We estimate that at least 5 firms will be granted subsidy. This is based on an average capacity of around 80 MW per project reflecting a mix of smaller and larger projects.

2.2. Please indicate the objectives of the scheme and the expected impact, both at the level of the intended beneficiaries and as far as the objective of common interest is concerned:

Please see the response to question 2.1.

2.3. Please indicate possible negative effects, on the aid beneficiaries or on the wider economy, that might be directly or indirectly associated with the aid scheme[4]:

Not applicable. Without subsidies, there will be no/less private investments in electrolysis. Therefore, there is no crowding out. Furthermore, this scheme ensures the availability of supply of renewable hydrogen but does not give any bias to use renewable hydrogen for potential users that have several decarbonization options.

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[3] Beyond providing a general description of the objectives and eligibility rules of the scheme, the aim of this section is to assess how the eligibility and exclusion rules of the scheme may be used to identify the effect of aid. In some cases, the precise eligibility rules may not be known in advance. In those cases the best available expectations should be provided.

[4] Examples of negative effects are regional and sectorial biases or crowding out of private investments induced by the aid scheme.

2.4. Please indicate (a) the annual budget planned under the scheme, (b) the intended duration of the scheme[5], (c) the aid instrument or instruments and (d) the eligible costs:

A: € 998.330.000 in total. B: the scheme will be open for application for a few weeks. The Netherlands states that the budget covers the period between 1 September 2024 and 1 September 2042. C: Subsidy. D: Eligible costs include both capex and opex.

2.5. Please provide a summary of the eligibility criteria and the methods for selecting the aid beneficiaries. In particular, please describe the following: (a) the methods used for selecting beneficiaries (e.g. such as scoring), (b) the indicative budget available for each group of beneficiaries, (c) the likelihood of the budget being exhausted for certain groups of beneficiaries, (d) the scoring rules, if they are used in the scheme, (e) the aid intensity thresholds and (f) the criteria the authority granting the aid will take into account when assessing applications:

A: Ranking is based on requested subsidy per MW installed capacity. B: there are no separate groups of beneficiaries, C: We expect that the budget will be exhausted and therefore, the tender will be competitive. D: Not applicable. E: Applicants can request at most half of the available budget (i.e. € 499.165.000). F: Feasibility of the project, compliance with requirements, such as: confirmation that hydrogen will be renewable, possession of required permit application, access to electricity grid, access to renewable electricity, feasible offtake.

2.6. Please mention specific constraints or risks that might affect the implementation of the scheme, its expected impacts and the achievement of its objectives:

Development of the market for renewable hydrogen has many uncertainties that could lead to beneficiaries not taking a final investment decision at a later stage.

3. Evaluation questions

3.1. Please indicate the specific questions that the evaluation should address by providing quantitative evidence of the impact of aid. Please distinguish between (a) questions related to the direct impact of the aid on the beneficiaries, (b) questions related to the indirect impacts and (c) questions related to the proportionality and appropriateness of the aid. Please explain how the evaluation questions relate to the objectives of the scheme:

With the evaluation, the Dutch authorities will assess the impact and effects of the aid scheme. The evaluation shall provide general information on whether the aid scheme has achieved policy objectives. More specifically on the direct impact, whether the aid scheme has resulted a national electrolysis capacity that contributes to policy targets. The evaluation also assesses wider indirect effects, including the use of renewable hydrogen in industry and mobility sectors. The proportionality will be evaluated by analysing the costs of the aid scheme compared to the results. Finally, the appropriateness of the aid scheme shall be evaluated by comparing the size of scheme, with that of other similar schemes in other EU Member States

5 Aid schemes defined in Article 1(2)(a) of Regulation (EU) No 651/2014 are excluded from the scope of the Regulation six months after their entry into force. After having assessed the evaluation plan, the Commission may decide to extend the application of the Regulation to such schemes for a longer period. Member States are invited to precisely indicate the intended duration of the scheme.

This is the best way to measure the direct and wider economic effects will be after the construction and operation time of the electrolysers (5 + 10 years), which is the same time as the duration of the aid scheme. For this reason, the final evaluation will be carried out after a period of 15 years. Two interim reports by external parties will be delivered along the way. In the first interim report, the Dutch authorities will organise an earlier evaluation after the subsidy has been granted (in 2024/2025) to assess the design of the aid scheme in order to improve the scheme for future tender rounds. A second interim report presents the initial effects of the aid scheme, mainly focussing projects' construction results such as the realised electrolysis capacity. If desired more updates, without analyses by an external party, can be delivered to the Commission along the way. An overview of the reports can be found under 7.1. The questions that will be answered in the different reports are:

Evaluation questions

Direct impact (questions to be answered in the monitoring report and final report)

1. To what extent did the aid scheme beneficiaries increase the electrolysis capacity in the Netherlands? What electrolysis capacity has been realised by the projects?

2. To what extent has the aid scheme contributed to achieving national climate and energy policy targets?

3. To what extent has the aid scheme led to FIDs and the realisation of electrolysis projects? And would these projects have been realised if no aid was received?

4. How many projects proposals have been rejected and what were the reasons for this?

5. Did the impacts vary between different tender rounds of the aid scheme?

6. What has been the impact of the aid for replacing existing hydrogen use with renewable hydrogen?

7. Was there an impact of the aid in the market position of (large) beneficiaries?

8. How many direct and indirect jobs were created as a result of projects that received aid?

Indirect impact (questions to be answered in the final report)

9. To what extent has the aid scheme contributed to the use of renewable hydrogen in the industry and mobility sectors?

10. To what extent was a cost reduction per kg renewable hydrogen achieved as a result of scaling up volumes in the market?

11. To what extent was a cost reduction for electrolysers achieved as a result of standardisation and learning effects?

12. To what extent have the planned hydrogen storages been filled as an indirect result of the aid scheme?

13. To what extent did the aid scheme drive down private investment in other renewable energy sources sectors?

Proportionality and appropriateness of the aid (questions to be answered in the final report)

14. To what extent did the aid scheme foster cost-effective projects?
15. Is there an optimal relationship between the awarded aid and policy targets?
16. How do stakeholders rate the proportionality and appropriateness of the aid?
17. What are the costs of implementing this subsidy module by the Netherlands Enterprise Agency?
18. How does the regulatory burden of applicants and recipients relate to the aid (possibly) obtained?
19. To what extent can be the awarded aid and realised results be compared with that of similar aid schemes in other Member States?

4. Result indicators

4.1. Please use the following table to describe which indicators will be built to measure outcomes of the scheme, as well as the relevant control variables, including the sources of data, and how each result indicator corresponds to the evaluation questions. In particular, please mention (a) the relevant evaluation question, (b) the indicator, (c) the source of data, (d) the frequency of collection of data (for example, annual, monthly, etc.), (e) the level at which the data is collected (for example, firm level, establishment level, regional level, etc.), (f) the population covered in the data source (for example, aid beneficiaries, non-beneficiaries, all firms, etc.):

Evaluation question	Indicator	Source	Frequency	Level	Population
1	#MW of installed electrolysis capacity	Netherlands Enterprise Agency data	One-off	National	Beneficiaries
2	% of projects related to total capacity	Netherlands Enterprise Agency data	One-off	National and project level	Beneficiaries and non-beneficiaries
3	# realised projects	Netherlands Enterprise Agency data	One-off	Project level	Beneficiaries
4	# rejected proposals	Evaluation external party and Netherlands Enterprise Agency data	One-off	Project level	Non-beneficiaries

5	# €/kg produced hydrogen	Evaluation external party and Netherlands Enterprise Agency data	One-off	Project level	Beneficiaries
6	# PJ renewable hydrogen	Evaluation external party and Netherlands Enterprise Agency data	One-off	National	Beneficiaries and non-beneficiaries
7	# market share	National data	One-off	National	Beneficiaries
8	# jobs	Evaluation external party	One-off	National	Beneficiaries and non-beneficiaries
7	# PJ renewable hydrogen	Evaluation external party and Netherlands Enterprise Agency data	One-off	National	Beneficiaries and non-beneficiaries
8	# €/kg produced hydrogen	Evaluation external party and Netherlands Enterprise Agency data	One-off	National	Non-beneficiaries
9	# reduction in €	Evaluation external party and national data	One-off	National	Non-beneficiaries
12	# volume in storage	Evaluation external party and national data	One-off	National	Non-beneficiaries
13	#€ in private investments	Evaluation external party	One-off	National	Non-beneficiaries
14	# €/MW	Netherlands Enterprise Agency data	One-off	Project level	Beneficiaries
15	Aid intensity	Evaluation external party	One-off	National	Beneficiaries and non-beneficiaries
16	Overall rating of stakeholders	Evaluation external party	One-off	National	Beneficiaries
17	# in € of implementation cost	Netherlands Enterprise Agency data	One-off	National	Non-beneficiaries

18	Analysis of the regulatory burden	Evaluation external party	One-off	National	Non-beneficiaries
19	Volume of aid in € and realised electrolysis capacity in MW	Evaluation external party	One-off	International	Beneficiaries and non-beneficiaries

Please explain why the chosen indicators are the most relevant for measuring the expected impact of the scheme:

See answer to question 3.1.

5. Envisaged methods to conduct the evaluation

5.1. In light of the evaluation questions, please describe the envisaged methods to be used in the evaluation to identify the causal impact of the aid on the beneficiaries and to assess other indirect impacts. In particular, please explain the reasons for choosing those methods and for rejecting other methods (for example, reasons related to the design of the scheme)[6]:

Different approaches are possible for the evaluation, coupled with different research methods (quantitative and qualitative). It is not necessary to apply all approaches across all research questions. However, the external party should carefully consider which approach(es) to apply to which research question. The evaluation is not limited to certain methods. On the contrary, additional input from the external party is welcome.

However, in order to evaluate the causal and counterfactual impact of the aid, quasi-experimental research methods are preferred. The external party should therefore consult and make use of the Energy State Aid: A Toolbox on Counterfactual Impact Evaluation (N. Farrell, 2022) in the evaluation of the aid scheme. A more detailed description of the planned evaluation methods can be found in section 5.2.

5.2. Given the characteristics of the aid scheme, the most viable methodology to be applied to investigate the impact and effects of the aid scheme could be quasi experimental methods, such as regression analysis and Difference-in-Differences. These methods use data on groups that were not exposed to the aid scheme, and estimate a causal relationship between the treatment and its outcomes. In this way, an attempt is made to demonstrate the effect of the aid scheme. Please describe precisely the identification strategy for the evaluation of the causal impact of the aid and the assumptions on which the strategy relies. Please describe in detail the composition and the significance of the control group:

As indicated in 5.1, it is preferable to use quasi-experimental methods to establish causal effects. For the evaluation, the intention is to ask the external party to use techniques from the field of energy transition policy evaluation, with as much attention as possible to the assumed causality in the operating mechanisms and hypotheses formulated. The exact use of control groups in the evaluation is still uncertain. The policy theory of this support scheme starts with the identification of a market failure that electrolysis projects will not be realised under current conditions. The evaluation will therefore consider whether projects would have been realised without the aid of this scheme and, if so, what the underlying factors were.

To this end, methods using treatment and control groups are preferable. However, given the limited number of potential beneficiaries and (the lack of) a natural control group, a

6 Please make reference to SWD(2014)179 final of 28.5.2014.

counterfactual impact assessment might be challenging. Nevertheless, the evaluator could choose to compare treated and untreated groups, such as regions, provinces or the different industry clusters within the country. It could be possible to make a comparison between treated and untreated provinces or industry clusters before and after the introduction of the aid scheme, or a comparison between on the same level where there are major differences in installed electrolysis capacity. In particular, comparing impacts between different industrial clusters is a viable way of measuring effects of the scheme, as the electrolysis capacity and other (in)direct impact are significant and visible in the different clusters. A suitable method would therefore be a difference-in-difference approach, as described in 3.2.3. of the Energy Toolbox.....

5.3. Please explain how the envisaged methods address potential selection bias. Can it be claimed with sufficient certainty that observed differences in the outcomes for the aid beneficiaries are due to the aid?

Please see the response to question 5.2

5.4. If relevant, please explain how the envisaged methods intend to address specific challenges related to complex schemes, for example schemes that are implemented in a differentiated manner at regional level and schemes that use several aid instruments:

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6. Data collection

6.1. Please provide information on the mechanisms and sources for collecting and processing data about the aid beneficiaries and about the envisaged counterfactual.[7] Please provide a description of all the relevant information that relates to the selection phase: data collected on aid applicants, data submitted by applicants and selection outcomes. Please also explain any potential issue as regards data availability:

The characteristics and progress of investment projects are routinely recorded as part of the monitoring carried out by the Dutch Enterprise Agency. In addition, an analysis is made of the data of subsidy applicants who were rejected by the Dutch Enterprise Agency on the basis of the criteria of the subsidy scheme. The data can be made available to the advisor with the consent of the non-beneficiary. In addition, stakeholder management also sheds light on parties that showed interest in the subsidy module but did not ultimately submit a subsidy application. They can also be asked to participate in the evaluation of the subsidy module. It is possible that non-beneficiary parties are not in favour of providing the data for the purpose of the evaluation and that non-applicants do not respond to the invitation to participate. The external party can also monitor rejected projects. In addition to the information provided, the external party could use public information about the decarbonization of industrial clusters in the Netherlands to assess the impact of the electrolyser projects within these clusters.

A possible limitation to data collection regards the low number of treated units. In the different tender rounds, around 5 successful applicants are expected but this number could

[7] Please note that the evaluation might require sourcing of both historical data and data that will become progressively available during the deployment of the aid scheme. Please identify the sources for both types of information. Both types of data should preferably be collected from the same source as to guarantee consistency across time.

well be lower. This might be insufficient for data collection and a reliable qualitative analysis. The evaluator should be aware of this limitation.

Another possible limitation is that data collection from unsuccessful applicant or interested non-applicants are only available on their voluntary permission and participation. This could make it more difficult to select a control group and unites. However, given the strong and widespread interest in the first two rounds of tendering, the well-established and interactive relationship between the Dutch authorities and industry, and previous experience of similar interactions, ensures that a large control group would remain even if a number of unsuccessful applicants and interested non-applicants would not participate voluntarily.

6.2. Please provide information on the frequency of the data collection relevant for the evaluation. Are observations available on a sufficiently disaggregated level, that is to say at the level of individual undertakings?

Beneficiaries will report annually on progress throughout the duration of the scheme. This information will form the basis of the evaluation. In carrying out the evaluation, the external party will collect additional information, in particular from case studies and surveys of beneficiaries and non-beneficiaries.

6.3. Please indicate whether the access to the necessary data for conducting the evaluation might be hindered by laws and regulations governing confidentiality of data and how those issues would be addressed. Please mention other possible challenges related to data collection and how they would be overcome:

Pursuant to the Regulation on national EZK and LNV subsidies (Articles 4.10.8, 4.10.9 and 4.10.10) and the Framework Decision (Chapter 11. Obligations of the subsidy recipient other than a funder, Articles 35 through 41) various obligations apply to the subsidy recipient. From this follows the provision of data for evaluation and other surveys as a condition to receive subsidy. It is assumed that the applying party knows this when submitting a subsidy application.

6.4. Please indicate whether surveys of aid beneficiaries or of other undertakings are foreseen and whether complementary sources of information are intended to be used:

Not applicable.

7. Proposed timeline of the evaluation

7.1. Please indicate the proposed timeline of the evaluation, including milestones for data collection, interim reports and involvement of stakeholders. If relevant, please provide an annex detailing the proposed timeline:

The evaluation will be carried out in subsequent stages and will include the following deliverables:

a. Interim report 1: Evaluation report on the design of the aid scheme

This report includes the evaluation of the design of the aid scheme, which will be done for national purposes in order to optimise the design of the scheme for future tender rounds.

Delivery to the Commission if wished by the Commission: January 2025.

b. Interim report 2: Monitoring report

The second interim report presents statistics on the scheme as it has been implemented until 2032. Based on the descriptive statistics collected in the annual reports delivered by the beneficiaries to the Dutch authorities, the report serves as a monitoring report that examines the development of the projects. This is done by focussing by answering monitoring questions on predominantly the construction of the projects. The projects' construction time is set for five years plus two years extension, which is why the first results can be monitored after 2032. Examples of questions are, but not limited to: To what extent did the aid scheme beneficiaries increase the electrolysis capacity in the Netherlands? What electrolysis capacity has been realised by the projects? Therefore, the interim report does not intend to evaluate the broader effects, but monitors the development and the first effects concerning the construction stage, i.e. the installed electrolysis capacity.

Delivery to the Commission: Q1 2033.

c. Final report

The final report presents and describes the impact evaluation of the complete scheme as described here.

Delivery to the Commission: Q1 2040.

7.2. Please indicate the date by which the final evaluation report will be submitted to the Commission:

January 2040

7.3. Please mention factors that might affect the envisaged timeline:

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8. The body conducting the evaluation

8.1. Please provide specific information on the body conducting the evaluation or, if not yet selected, on the timeline, procedure and criteria for its selection:

It is planned to conduct the final evaluation by an external and independent evaluator, which is to be selected through tender procedure. The evaluation will be carried out by an expert consultancy firm, specialised in and having experience with energy policy evaluation.

8.2. Please provide information on the independence of the body conducting the evaluation and on how possible conflict of interest will be excluded during the selection process:

The evaluation will be conducted by an external party that will be selected through a transparent tender procedure. This will therefore be safeguarded by conditions that will be set in the tendering procedure and the awarding of the contract.

8.3. Please indicate the relevant experience and skills of the body conducting the evaluation or how those skills will be ensured during the selection process:

During the selection process a selection will be made according to the expertise required for the evaluation. The evaluating body will therefore need to have demonstrable knowledge

and experience in conducting policy evaluations/data analyses in relation to energy transition. The tender procedure to select the evaluator will include criteria to exclude possible conflicts of interest, high quality team, experience with similar evaluation, costs, among other criteria.

8.4. Please indicate which arrangements the granting authority will make to manage and monitor the conduct of the evaluation:

The granting authority will establish a review committee of at least three people to provide guidance to the external party and review the outcomes.

8.5. Please provide information, even if only of an indicative nature, on the necessary human and financial resources that will be made available for carrying out the evaluation:

We estimate a substantial budget to conduct an evaluation of this size. However, we will have to decide on the final budget at the time when the exact scope of the evaluation is more secure.

9. Publicity of the evaluation

9.1. Please provide information on the way the evaluation will be made public, that is to say, through the publication of the evaluation plan and the final evaluation report on a website:

The evaluation results will be made public on the website of the Dutch government and the competent Ministry as well as of the Netherlands Enterprise Agency.

9.2. Please indicate how the involvement of stakeholders will be ensured. Please indicate whether the organisation of public consultations or events related to the evaluation is envisaged:

For the purpose of the evaluation, interviews will be conducted with companies that have applied for and received a grant decision, as well as with parties that have applied for a grant decision but have not received one. The relevant industry associations will also be involved through working methods to ensure a thorough evaluation. The preparation of the aid scheme involved similar stakeholder participation.

9.3. Please specify how the evaluation results are intended to be used by the granting authority and other bodies, for example for the design of successors of the scheme or for similar schemes:

The results of the evaluation will be shared with all departments involved in the Climate Fund's subsidy schemes, in particular the Fund's management. The results and recommendations of the first evaluation will be used in all future tender rounds of the scheme.

9.4. Please indicate whether and under which conditions data collected for the purpose or used for the evaluation will be made accessible for further studies and analysis:

Not applicable.

9.5. Please indicate whether the evaluation plan contains confidential information that should not be disclosed by the Commission:

Not expected.

10. Other information

10.1. Please indicate here any other information you consider relevant for the assessment of the evaluation plan:

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10.2. Please list all documents attached to the notification and provide paper copies or direct internet links to the documents concerned:

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